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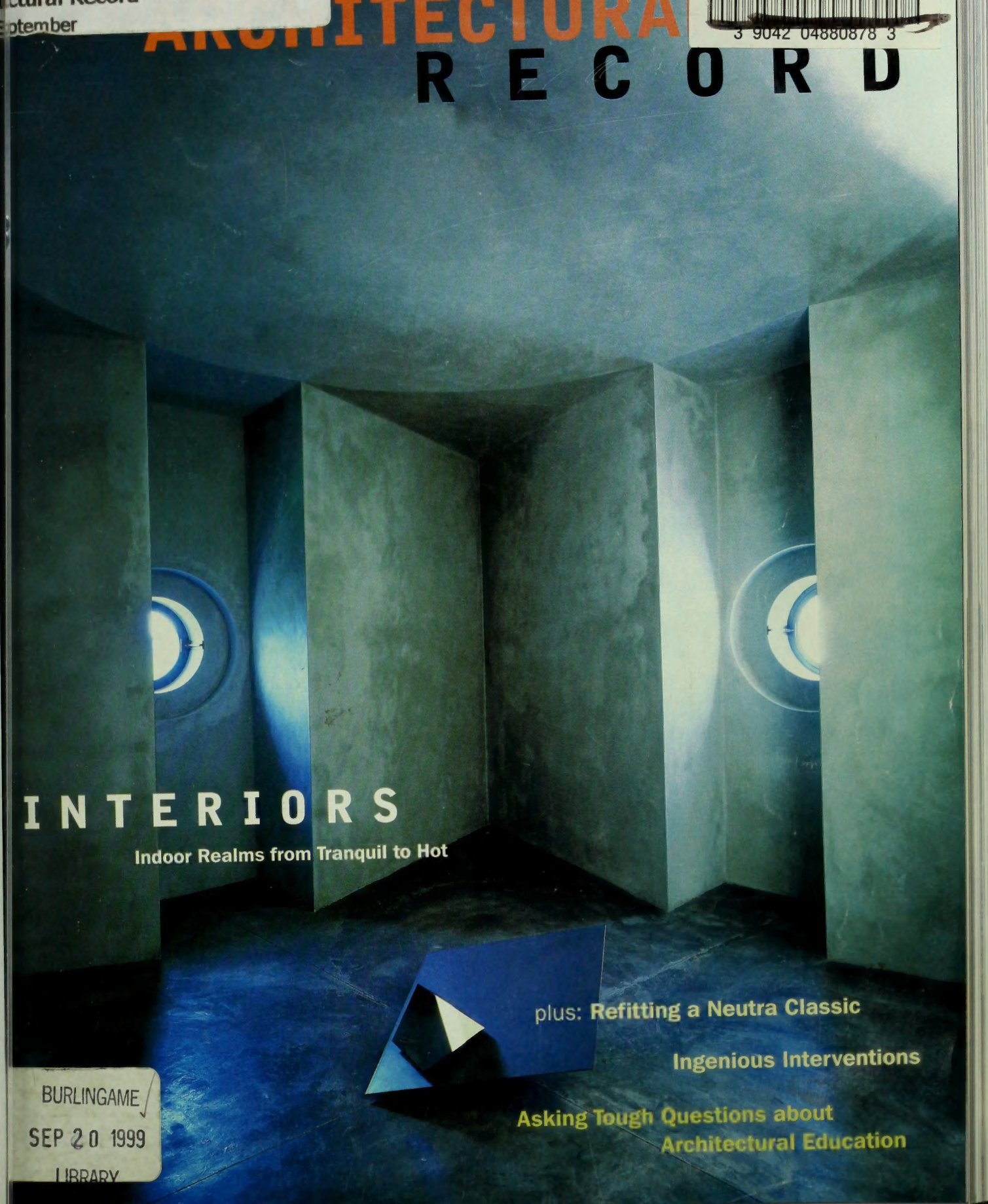

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ARCHITECTURAL RECORD

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Cover: *Benedikt Rejt Gallery, Czech Republic, designed by Emil Prikryl. Photograph: © Jan Maly*
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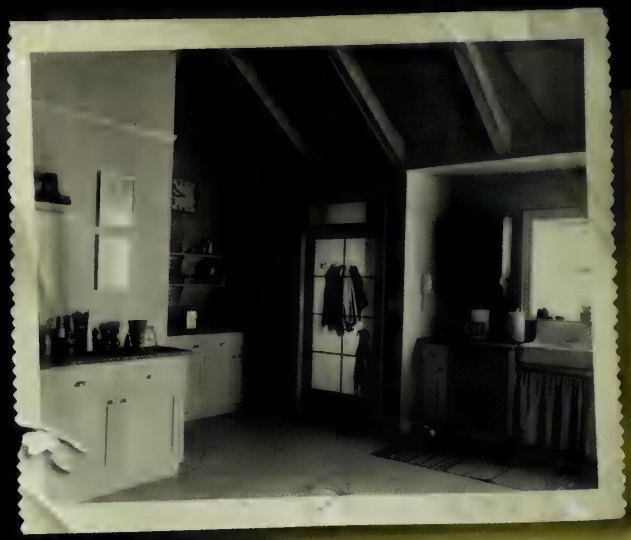

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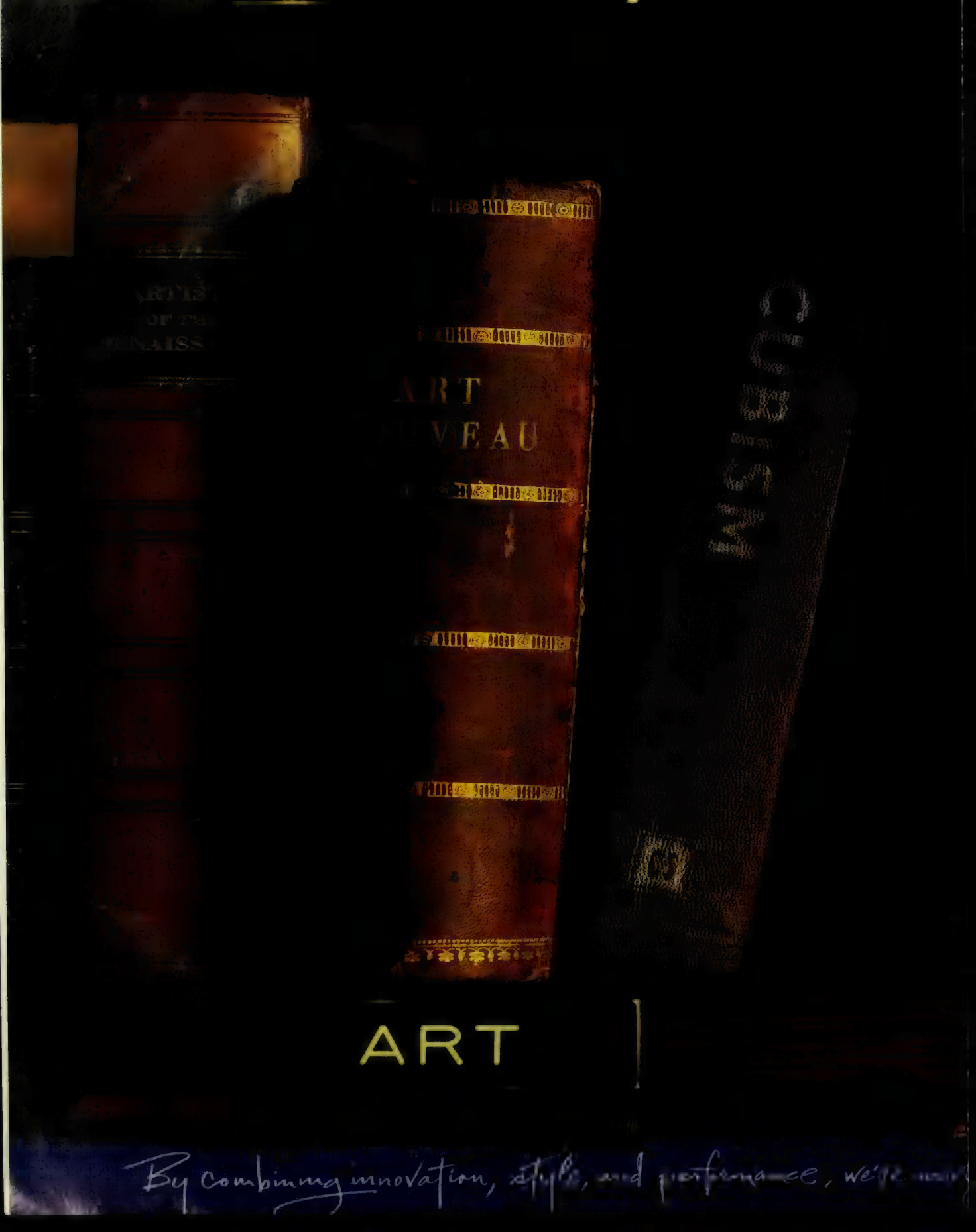
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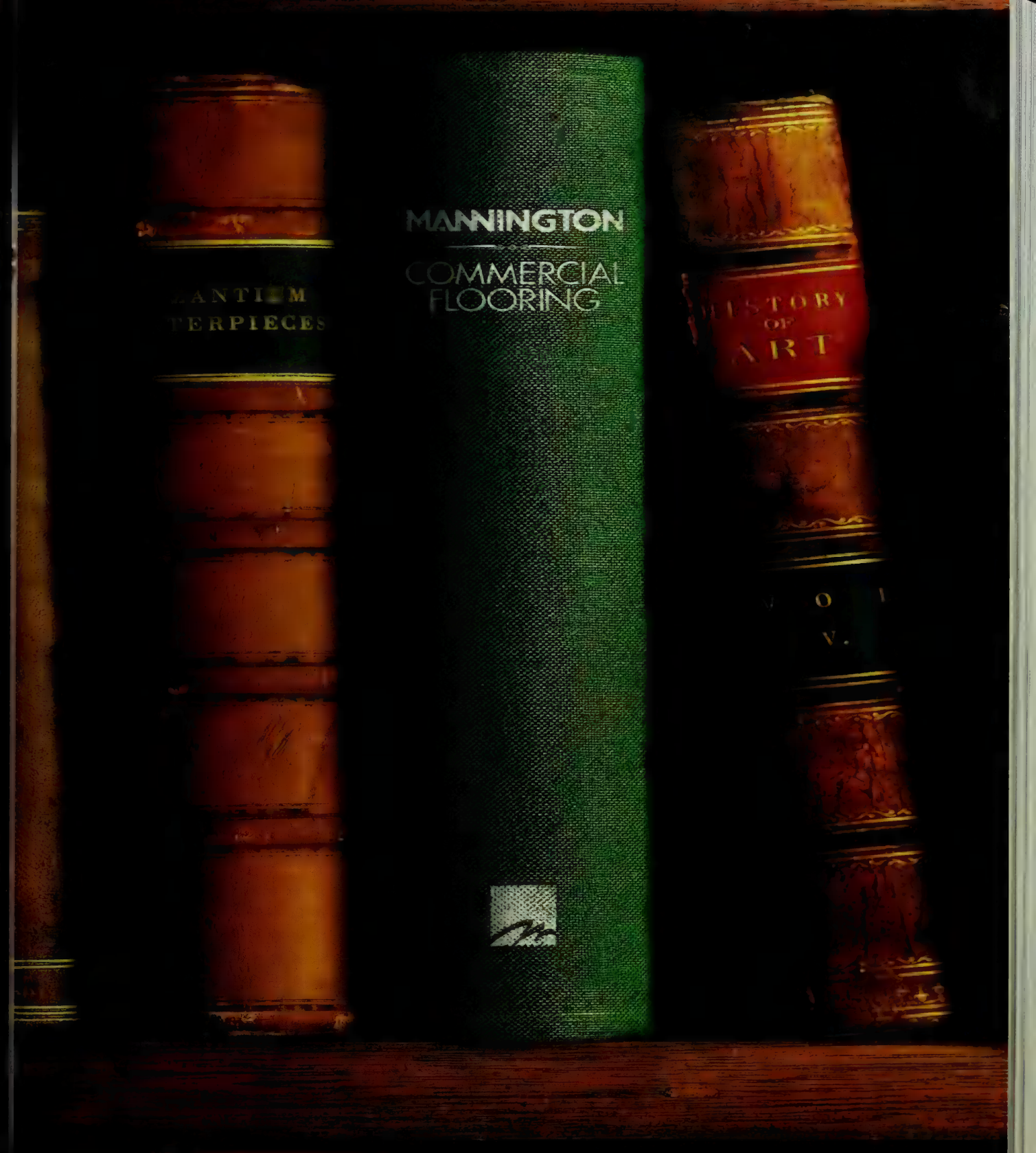

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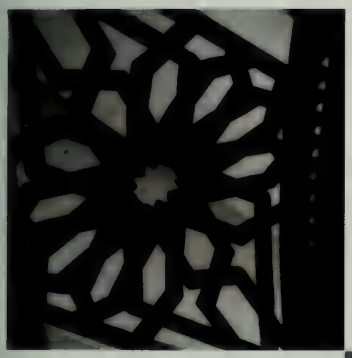

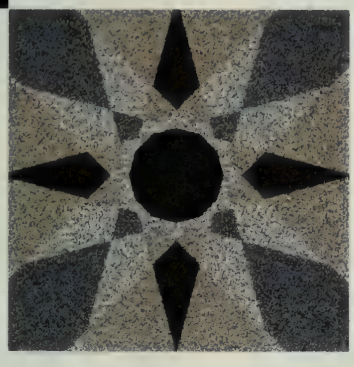

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CIRCLE 10 ON INQUIRY CARD

EDITORIAL
You Had To Be There

BY ROBERT A. IVY, FAIA

The space fairly vibrated. On one of the hottest July days, the living room at Taliesin West melted into a crucible—of space, sense, and memory—all surrounded by the blast-furnace heat of the Sonoran desert. A chair of Wright's own design acted like a time-warp, catapulting the visitor into a place where present and past merged: After a day of overseeing drawings, Frank Lloyd Wright had sat in that odd, angular chair, perhaps drumming his long fingers on the armrest, and discussed his most intimate thoughts with Olgivanna. The present scent of wood smoke laced the air like incense, or personality; despite the Foundation's care, certain objects and surfaces looked slightly frayed at the corners. At that moment, Taliesin West, on the fringes of Scottsdale, seemed utterly real and, conversely, otherworldly. You had to be there.

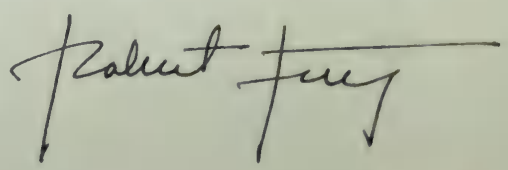
No amount of reading about Wright, or memorizing the photos of the winter residence, could prepare you for the reality. How else can any of us experience interior spaces but to occupy them? Despite our best efforts at this magazine to present interiors in all their fullness, and granting the skill of the great architectural photographers we publish, no two-dimensional photography or 3-D computer rendering captures the spatial nuance, the cast of light, the smudges in peripheral vision, the sounds or odors or feel as fully as a visit. In this issue, photography of Richard Neutra's Kaufmann House only hints at the powerful, interlocking spatial flow between indoors and out.

For architects, travel has become commonplace and necessary. Like our medieval ancestors, architects increasingly travel to the shrines of the masters, as the Wife of Bath made pilgrimage to Canterbury, "the holy blissful martyr for to seek." We are harvesting experiences, so much that you can't escape your peers: The other guests breaking bread with you at remote La Tourette, Le Corbusier's monastic masterpiece in the Jura mountains, probably babble in archi-speak just like you. Tuscany and Umbria will be overrun this September with men and women in Soho black. Where do they come from?

Historically, elite institutions like the American Academy in Rome offered fellowships to the best students, a practice that continues and flourishes. But access to the Great World has been democratized. Cheap airline fares and Eurail passes have contributed to the phenomenon, but the prime instigators of architectural tourism may be schools of architecture. Among the 122 schools that are ACSA members, fully 48 maintain studios abroad, of which 20 share cooperative programs with international partners—and promote international travel. The ubiquitous sketchbooks and Pentax-laden students share familiarity with great architecture and cities in a way most couldn't before the worldwide backpacking circuit began in the 1960s.

Practitioners don't lag far behind. For example, Mithun Partners in Seattle sponsors a biennial office field trip on a remarkable journey to architecturally rich locations. The group includes about 30 employees, typically associates and up, although even receptionists with 10 years' experience qualify. This year, the Mithun architects that travel to Berlin will have specific tasks to accomplish and information to gather, but all must turn in a journal, slides, and a sketchbook, from which the firm will compile and professionally publish a record of the trip. According to principal Bert Gregory, AIA, the excursions allow young and older architects to forge a common language and broaden everyone's point of view for upcoming designs.

While most firms may not be able to afford to underwrite such an ambitious trip as the Seattle architects enjoy, every architect should be aware that basic professional literacy now includes real-world engagement with the classics and personal familiarity with the best contemporary structures. The ante has been raised for all of us, but rather than a burden, what a joyous obligation. This magazine is only an appetizer; go get a ticket to ride.



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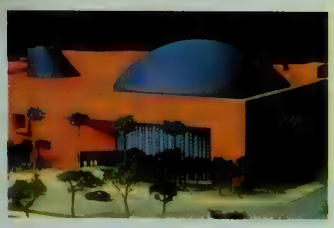

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LETTERS

Fantastical Guadalajara

In your June issue [JVC Center, page 132] you reported—uncritically—Daniel Libeskind's fantastical assertion that his collision of forms "will help reshape the university as a social organism with common interests and goals." In short: if it looks like interaction, it will cause interaction. It is hardly responsible of you to present, unchallenged, such sophomoric thinking.

—Tim Culvahouse
Adjunct Steward Professor
California College of Arts and Crafts
San Francisco

Critical urban design

John Kaliski [Critique, June, page 45] calls for a "critical urban design" in our cities, urging architects, urban designers, and planners to take a hard look into reality and not into what Michael Sorkin would call the "Disneyfication" of cities. I couldn't agree with him more. It takes someone with a lot of guts to come out and say what he said, especially in the face of what many perceive as the successes of New Urbanism. He echoes the same call and principles of such noted architects as I.M. Pei, Kenneth Frampton, and a small but growing number of unknown architects and students like me who believe that we should not be boxed in by "isms." Nor should one's ego supercede the needs of an entity, whether it be a piece of furniture, a building, or a city. Instead of celebrating our own ideals and forcing others to "believe," we must take to heart the humble beginnings of architecture—providing shelter. For once, throw away the enormous ego, step down from the pedestal, stop talking, and start listening.

—Mark Steven Ong
Brooklyn, N.Y.

Automatic transit for the people

I was glad to read the article concerning public transportation in cities [Speak Out, June, page 24] in light of the new federal funds. The article speaks well of the factors that must be integrated to have a working transit system. However, a very important point was missed. The types of environments that have been created by zoning codes (read: low density) are major setbacks. Transit only works when the densities it serves are high enough to provide the ridership to support the system. Changing zoning codes across the country is the first step in implementing fast, reliable, convenient public transit in any city.

—Carol Marra
Seattle

Having studied urban planning and the role of public transportation in building and rebuilding cities and its countering the effects of sprawl, I agree that architects hold a significant place in the future of cities in their public-transportation design and decisions. It is important for the world of the future to be able to survive and not be strangulated by sprawl, lack of space, and the resulting pollution and loss of urban place. However, I must point out that there is a very fine line between being successful with public transportation and creating a mess.

I write this to reinforce Eli Naor's sentiments that architects should take great interest in becoming involved with the creation of public transportation. If we leave it to the politicians we might not have solutions that improve the quality of life and public transportation systems.

—Steven J. Kushner
Fairport, N.Y.

This letter is a combined response to two July items: Thomas Fisher's article "A Call for Clarity" [Critique, page 47] and Marcia W. McLoughlin's "Why overpower the neighborhood?" [Letters, page 21].

Regarding the Landa House, Ms. McLoughlin forgets the difficulties of this project as described by special correspondent Suzanne Stephens [April, page 128]. After all, the site was only a 30-by-100-foot lot. And the budget was less than a quarter of a million dollars. As well, Jutta and Hans "wanted an architect who could put something on a small lot and not have it look like a concrete box." And Thom Mayne wanted to "investigate something in a focused way that can become an element of a larger work." Mr. Ivy gets a "signature" filler for the April issue. Always a crowd-pleaser. Please be fair Ms. McLoughlin, the pressures of haute couture are immense.

At last report "the architect and the client are proud of the house," and it seems our special correspondent feels that you and the neighbors should be just as proud to play such a crucial role in this great experiment.

Thomas Fischer [Critique, page 47] is correct to call for a greater variety of national journals. More so, the ones we have should become more gutsy and less starstruck.

—Matt Harris
via the Internet

Two steps forward, one step back?

Products Editor Rita Catinella's "A Look Back at Old or Extinct Building Products from Architectural Record's Past Century" asks, "who in the world would specify products advertised like those

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CIRCLE 14 ON INQUIRY CARD

above? You did, or rather, members of your profession once did."

When it comes to two of the products cited in the article, linoleum and cork floor tile, RECORD displays disregard for environmentally desirable products. For a number of years, both cork and linoleum (largely a cork derivative) have been making a comeback and are being used in place of vinyl by architects concerned with the ecological consequences of their specifications. In lumping these materials together in your article with freon, asbestos, and lead paint as "outdated architectural building products," you confuse matters further by associating materials that have been withdrawn from the market for health and safety reasons with products that are environmentally rather "friendly."

Shouldn't an architectural magazine such as RECORD try to represent the conscience of our profession, not just its largest vendors, who dominate the advertising pages?

—*G. Mackenzie Gordon, AIA*
Lakeville, Conn.

Rita Catinella responds: Sorry for the confusion, but the article's heading states its intention: to look back at products that are "ancient history" or "ready for a comeback." It did not mean to imply that the entire grouping of products shown were environmentally undesirable. As you say, cork and linoleum fall into the "comeback" category, as does terra cotta. When I queried "who would specify products advertised like those above?" I was directly referring to the three products mentioned in italics: asbestos, lead paint, and ultraviolet glass.

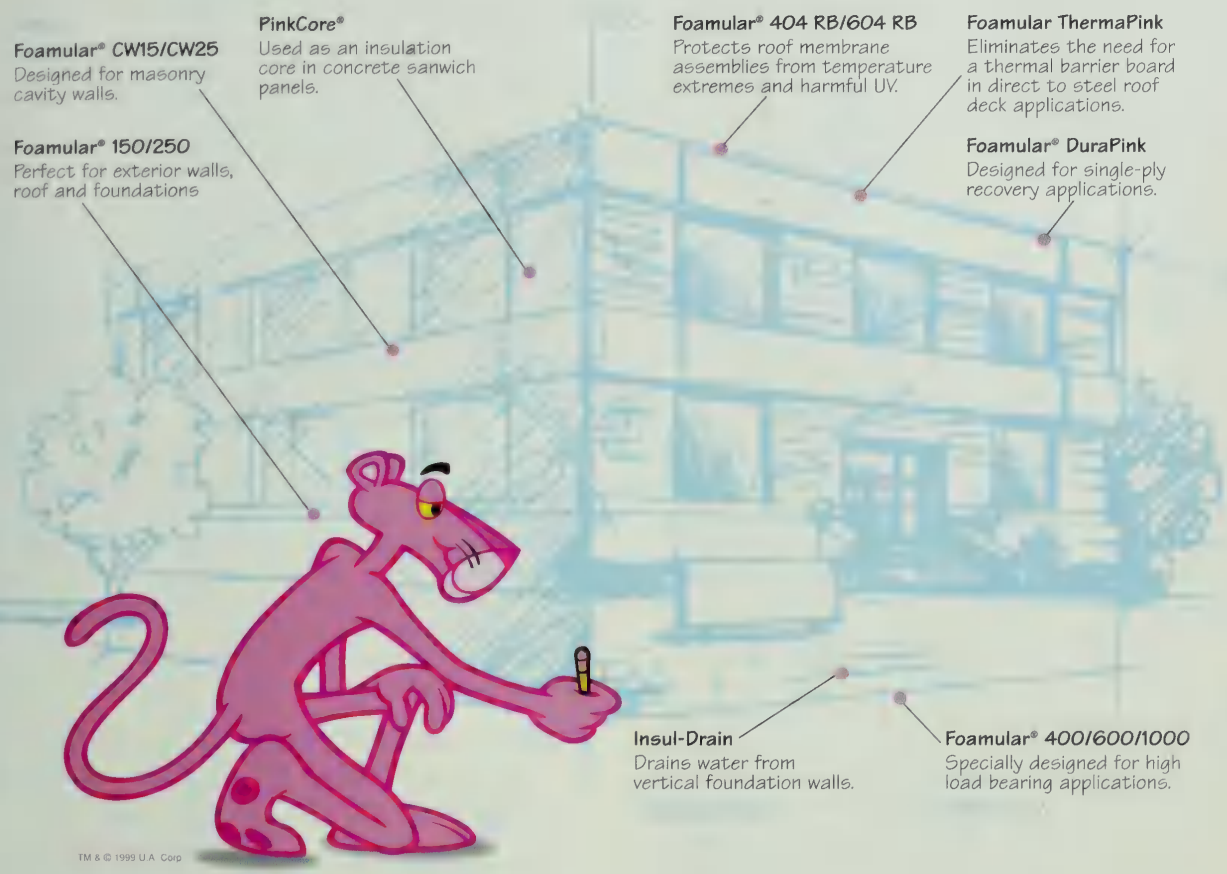
For recent information on sustainable design and products, you can refer to the May 1999 New Products focus on sustainable wood; details on the sustainable design of Lord Norman Foster's Reichstag in July 1999; last month's technology story, "What It Means to Be Green," and our Web site [www.archrecord.com], which features a special sustainable products section. Finally, the advertisements were chosen because their graphic style was a fun way to revisit our magazine's past. Current advertising schedules were not a consideration.

Corrections

In August, we gave credit to Christian Richters for the photo on page 85. The credit should have gone to Margherita Spiluttini. Two credits were missing from the August story on Second Stage Theater on page 93: architect Dan Wood (OMA) and consultants Ambrosino, DePinto and Schmeider (MEP). The photo on page 68 of our July issue was miscredited. It was taken by Steve Rosenthal. In our July Building Type Study on Celebration Health, on page 134, we left out a credit for a member of NBBJ's interiors team: designer Richard Brennecke. And, finally, the drawings in our July story on Caruso St. John Architects were incorrectly annotated. The drawings and model shown are for the Rome Art Gallery competition. We regret the errors.

The correct copy for the Armstrong World Industries' ceiling product shown in July's New Products section on page 158 should read: The new Corridor Ceiling System Solutions from Armstrong provide a range of alternatives to traditional corridor ceilings, including longer-span smooth textured or metal planks, with acoustical options and abuse resistance. They are designed and engineered to interface with other Armstrong products, suspension systems, and perimeter solutions for a fully integrated, finished look. The planks are available flat or vaulted.

CIRCLE 15 ON INQUIRY CARD



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SPEAK OUT Corporate clients want workplaces that streamline processes and retain employees. Only architects sensitive to interiors can deliver.

BY DEBRA LEHMAN-SMITH AND JAMES MCLEISH

Debra Lehman-Smith, Assoc. AIA, and James McLeish, AIA, are partners at Lehman-Smith + McLeish, a Washington, D.C.-based architecture and interiors firm whose current projects include headquarters for Gannett/USA Today, Freddie Mac/Building 4, and General Dynamics.

Today's corporate clients demand new offices and facilities with designs focused not only on the building's appearance but also on critical workplace issues. These include workflow and processes, organizational structure and corporate culture, productivity, and worker attraction and retention. Yet many recent corporate facilities don't reflect this new reality—and thus fail to meet the clients' needs. Why does the American architectural profession fail to give priority to interior design and shirk its creative responsibilities with these projects?

Many architecture firms don't recognize that interiors increasingly drive the design process when it comes to corporate facilities. As a result, interior architects aren't taking a strong role on the design team. Architects often consider interiors to be an afterthought, and this has to change.

Not only are they not taking charge the way they should, interior architects often use formulas and standardized benchmarking rather than study carefully a client's needs and determine customized, cost-effective design solutions. Architects can get caught up in their own egos, instead of focusing on the corporate client's range of needs. Often, they approach the client's problems with formulaic or outdated resolutions, instead of rigorously examining the client's specific profile.

The problem is deep-rooted. Our schools reflect and reinforce our profession's misunderstanding of the role of interior architecture in the overall design process. At many universities, the architecture and interior architecture programs are separate. Students aren't taught to think about integrated design. Making matters worse, some universities consider interior architecture a human resource issue—a matter of corporate policy, not design.

Our universities need to treat architecture and interior architecture as two branches of the same tree. The scope of architectural studies must be broadened to include interior and landscape design, and interior architecture students must be taught basic design skills and architectural understanding. Students should be taught to see the outside and inside of a facility as a single, interconnected design. Schools should follow the example of the University of Cincinnati, which has a multidisciplinary program that incorporates architecture, interior design, and visual arts.

TODAY'S CORPORATE CLIENTS DEMAND NEW OFFICES FOCUSED NOT ONLY ON APPEARANCE BUT ALSO ON CRITICAL WORKPLACE ISSUES.

Problems in the educational system can provide easy excuses. The change in attitudes toward interior architecture have to come from within the profession. Interior architects need to understand that corporate design demands their leadership, with the goal being to design a unified structure that reflects the client's specific requirements. Often these corporate projects involve a design team of several firms, and a smoothly functioning unit will create a better building than each firm could have produced on its own. Thus, a corporate facility's interior, exterior, landscape, graphics, art, and other visual elements should be designed as integral components of one solution, rather than as independent entities.

When architects look at public spaces like airports, libraries, and museums, we can see that a strong relationship between the interior and exterior spaces has been paramount. We must now look at the facilities we design for corporate America in much the same way. If interior architects don't rise to the challenge, our corporate clients will go elsewhere. Those international architecture firms and business management consulting companies who see the synergy and totality of a building—and who understand that a client's business goals transcend all phases and disciplines of the design process—are waiting in the wings. ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk) to Speak Out, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.archrecord.com and clicking on News/Features/Dialogue. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive text approval.*

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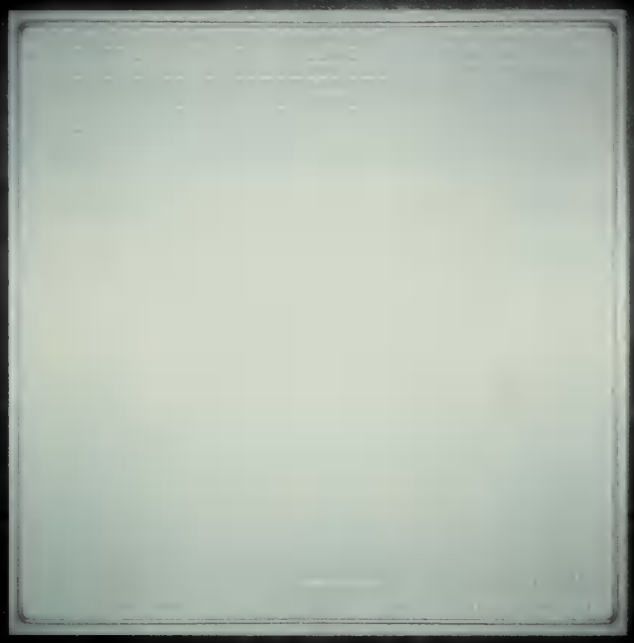

MENTORS It's not personal, it's business: Peer review and self-criticism are crucial tools that elevate the quality of preliminary designs.

Andy Pressman, AIA, NCARB, is associate professor of architecture at the University of New Mexico and leads his own architecture firm in Albuquerque. His latest book, The Architect's Portable DESIGN Handbook, *will be published by McGraw-Hill in 2001.*

Most architects share the unpleasant memory of encountering a diatribe such as this:

"Your project is about meaningless, multivalent form devoid of theoretical underpinning. There is little evidence of rigorous intellectual investigation or even a hint of innovation. It's a gratuitous contrivance in search of an idea. The work is so reductive, it's about nothing, and that might be vaguely eloquent if it was intentional. Can we move on?"

What can you say about a 25-year-old architecture student who was just brutally attacked in a design review? That she's quite talented, perhaps. That she listens to Massive Attack and just saw *Eyes Wide Shut*. That she loves architecture. And that she will need years to recover from the trauma of her early studio education and start to embrace pragmatic and appropriate criticism, be it from clients, peers, or public stakeholders—the kind of criticism that is essential if her projects are to be as effective and beautiful as they can be. No wonder the Boyer report, the study of architectural education prepared by the Carnegie Foundation for the Advancement of Teaching, concluded that juries can "foster excessive egotism and an adversarial approach to clients."

Break away from bad habits

We're all aware that one of the developmental problems we must overcome is the systematic and often ruthless criticism presumably utilized to bring students to overarching truths or principles about architecture. Weld Coxe, HON. AIA, founding principal of the Coxe Group, believes that the sort of destructive personal criticism alluded to in the fictitious mad professor's rant—a familiar rite of passage in schools of architecture, as we know all too well—seriously undermines the primary goal of the profession, which is simply to create excellent design.

What can we do about this problem? We must readily identify and admit to mediocrity and fraud, make every effort to avoid premature enthusiasm for trends and fads and even apparent breakthroughs, and recognize individuals for their contribution and for caring.

Contribution and caring? What do these words have to do with creating better architecture? Contribution and caring are values that should be fostered in our profession and expected of all practitioners. Why? Because criticism should *strengthen* our colleagues and their work, rather than tear them down. Is this concept self-evident? A bit idealistic? Sure, it is. But time and again history has demonstrated the value of simply reminding ourselves of who we should strive to be.

Attitude adjustments are one matter. But what specific methods can architects use to undertake positive and meaningful criticism of their work? Self-criticism and peer review—strategies that are underutilized in our field—should be a matter of course for architects in the midst of the design process.

The art of self-criticism

Self-criticism is an acquired skill, a subset of criticism, that can efficiently stimulate new ideas, infuse projects with special meaning, and help formulate cogent arguments in support of convictions and aspirations. I asked Christopher Mead, professor of art history and architecture at the University of New Mexico, to elaborate.

USED PROPERLY AS DESIGN TOOLS, SELF-CRITICISM AND PEER REVIEW ENSURE AN IDEA'S COHERENT DEVELOPMENT.

Mead suggests that self-criticism assists the architect in "formulating a project's aesthetic and social purpose at the start, so that the project, as it develops, can constantly be measured against this original conception." Used properly as a design tool, Mead says self-criticism "serves initially to test the strength of the original idea and then, once the value of that idea has been proven, to ensure its coherent development by editing out missteps or flaws." Every line on the paper or every pixel on the computer screen should relate to the bigger concept.

Given that we're all pretty good at design fundamentals—solving the functional equation—it follows that self-criticism must address more elusive factors. Mead suggests that this has to do with matters beyond the design's immediate utility; in other words,

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CIRCLE 37 ON INQUIRY CARD

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the question of whether an architect is creating a culturally significant work of art.

Taking an unflinching look at one's own work has tangible benefits. But outside opinions are also essential. To that end, peer-review programs offer an appealing vehicle for the delivery of good criticism.

A jury of peers

Doug McCallum, AIA, is the manager of the "Works in Progress" program of the Boston Society of Architects. He says that discussing design is the sole intent. Each month, an architect presents a project in process and chapter members—and occasionally others from allied disciplines, such as artists, landscape architects, or planners—assemble to constructively critique the work of one of their colleagues. They do it out of the office context and away from the pressures of a business environment. McCallum says the sessions provide perceptive discourse to enrich specific projects and advance general knowledge. This program is a model of professional behavior at a high level, one that could be implemented by even a small group of local design professionals.

There is a great advantage to external reviews. Fresh eyes, unimpeded by explicit or implicit agendas, can be focused on design quality and introduce new perspectives. The more exposure to diversity in points of view, the more possibilities become evident. Another benefit accrues to the reviewer. Experience in evaluating the work of others will likely contribute to more objective and effective ability at self-criticism.

Christopher Mead deftly links self-correction mechanisms with external criticism. He explains that self-criticism "provides the architect with a means to deal with the criticism offered by others, because it sets the architect's own idea of a project as the standard against which critical reactions can be judged—not defensively, but confidently." Having a solid base makes insights from external sources easier to accept.

A communal effort

Because it is so easy to whine about the mediocrity surrounding us, we need to be especially conscientious about allocating energy toward creative and activist methods of raising the level of (or at least discussing meaning and content in) architectural design. Effective self-criticism and peer review are elements of real professionalism as well as good business.

Traditionally, criticism—whether delivered by another or self-generated—represents a dialectic. This typically means that a gulf of some type exists between that which is regarded and that which is evaluated; and as C.P. Snow has observed, the differences between the two poles often cause trouble. Misunderstanding, hostility, abject bias, and even a total absence of discriminating judgment can easily be the end result of critical effort.

The question this column raises is how might we redefine and exercise a more effective and genuinely constructive brand of criticism. Potential answers to this question include a general rediscovery of (dare I say?) teamwork and altruistic critical thinking during the design process, as well as vigorous advancement of the art of self-criticism, which should also take place during design. Simple and accessible instruments for these "solutions" exist. All that is required is a commitment to utilize them. ■

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design and construction, send submissions: by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; fax 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

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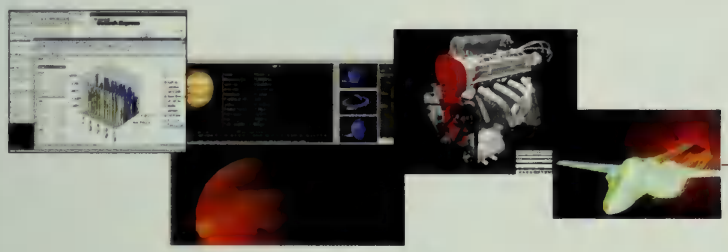

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CIRCLE 19 ON INQUIRY CARD

PULSE RECORD readers were asked: Should architects be more political?

No. Politically oriented architects more often than not promote monopolistic architecture.

Here in the Philippines, a lot of work is done by the same architects. The problem is, they keep on repeating their concepts, making the environment unsightly, and leaving other architects without work.

Politicking causes other problems as well. Take the case of our business district here in Ayala, Makati. The skyline is not visually attractive because architects with contacts to the city building code officer defy the rules of height limits. If what is required is a 10-story building maximum, they pay off the building inspectors and build a 20-story building. It's ridiculous and can be blamed on politically motivated architects.
—Emerson P. Hernandez
Antipolo, Philippines

Yes. Of course we should be, especially when inclined toward urban design projects. If we aim for a better tomorrow I think we must go political. An example here in India: an architect became a member of parliament during the 1960s, resulting in easier and faster implementation of hard-worked design projects and a more serious take on regional architectural associations.
—Sivaraman Venkatraman
Pondicherry, India

Yes. Architects should place their clients' interests above any political considerations. The design and construction of any single project is not the appropriate forum for such expressions. However, a designer should petition code organizations, trade associations, and governmental entities to effect change. I find that many are unwilling to put time and effort into this process.
—Andrew E. Harris
Denver

Yes. Thank God architects are not a monolithic group. May the introverted architects (those energized by individualistic tasks) focus on designing. May the extroverted architects (those energized by contact with people and with civil affairs) give attention to politics. May we all not ignore or lose sight of the big picture.
—Miles Battle
Brookeville, Md.

Yes. Architects should endeavor to be active politically because they have great skills and varied perspectives that are needed when trying to solve problems. I have recently become involved with a politically active group in my community, and it is helpful for me to hear the concerns of others in my city as we discuss planning, development, and livability issues. Plus, I see the leadership qualities that many architects possess as useful in the public/political arena.
—Donna Johnson
Edinburg, Tex.

More answers to: Can American architects learn from their European counterparts?

Yes. The U.S. is still a young country with a yet-undefined architectural tradition. The references drawn from foreign counterparts, including the education at the Paris' Beaux Arts School, shaped the architectural styles in this century. Politics, the economies of construction, and fast-track construction processes disregard the essence and care for proportions and style that shape the development of European architecture. And yet, there is not enough liberty of expression or innovation characterizing the work of foreign architects. Only American architects with a foreign education seem to be more open-minded in this respect.
—Alicia Dmaz de Lesn, Assoc. AIA
Chicago

Yes. Dedication to one's own culture: this is what is missing in discussions about how poor American architecture is in comparison to European architecture. American architects tend to want to criticize their own culture or impose foreign ideals on it. Generally, European architects express confidence and understanding of their particular cultures in their structures. This is something American architects could learn from them.
—Aida Latorre
Dallas

Yes. I think there is often a strongly moral component to architecture in Europe—a component and dialogue not entirely lacking in America, but in Europe the vision of the collective is more often expressed. Architecture freed from historicism has a transcendent function in Europe that is not as compellingly felt in the U.S. It has to do with class and of trying to reinvent a place where strife and resentments are things of the past.
—Frederick Shands, AIA
Stockholm, Sweden

This Month's Question

Interior architecture: Is it architecture's neglected stepchild?

There was a time when putting the inside of a structure together was as natural a part of the process of building as creating the exterior. Is that no longer the case? Our Speak Out [page 26] contributors think architects are designing interiors as an afterthought, thus missing an opportunity to create a total building. Do you agree or disagree?

Fax your response to ARCHITECTURAL RECORD, 212/904-4256, or visit www.archrecord.com and click on News/Features/Dialogue to voice your opinion by E-mail.

Note: *Pulse reflects individual responses to each month's question and is not meant to be construed as formal research.*

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National Terrazzo & Mosaic Association 1998 Honor Award

Bio-Chemistry Building University of Wisconsin at Madison

ARCHITECT
Flad & Associates
Madison, WI

DESIGNER/ARTIST
Norie Sato
Seattle, WA

Entitled "Biochemistry Waltz," this terrazzo floor was designed by internationally recognized artist Norie Sato of Seattle, Washington. This floor reflects both historical and current research in the department and provides a spectacular backdrop linking the past and future as the department enters a new century. It is worth noting that the faculty, students, and staff also contributed intricate elements for the floor. In fact, the Biochemistry Department artist and a local artist also assisted with design ideas. This floor is an excellent example of the use of a very practical, permanent construction material being used as a decorative art form.

National Terrazzo & Mosaic Association 1998 Honor Award

Ethel M Chocolates Show Case Mall, Las Vegas

ARCHITECT
Cunningham Group
Marina Del Rey, CA

Epoxy Terrazzo was specified at the first level retail store for its durability, maintenance concerns, and design parameters. After further design review, and due to color requirements of the owner and design team, terrazzo was added throughout the store's second, third, and fourth levels. The design required that the flooring match each "M&M" color, and terrazzo seemed to be the only option. General Polymers matched each M&M color, and we then used the synthetic chips from Fribel to achieve the required colors. Large M&Ms are installed throughout the project, which creates an extremely colorful installation.

Photo © Spukenic Studios

National Terrazzo & Mosaic Association 1998 Honor Award

Douglas County Courthouse Douglasville, Georgia

ARCHITECT
Cooper Carry & Assoc., Inc.
Atlanta, GA

This outstanding use of Epoxy terrazzo included not only the flooring, but also poured-in-place stair treads and risers. The beautifully proportioned geometric patterns using four colors add an aura of grace and dignity to the Rotunda and adjoining hallways. The choice for using terrazzo on this project resulted from the need for an attractive, permanent, easily-maintained flooring material. Terrazzo meets these requirements!

National Terrazzo & Mosaic Association 1998 Honor Award

Motown Cafe at New York, New York Casino Las Vegas, Nevada

ARCHITECT
Haverson Architecture & Design
Greenwich, CT

Terrazzo was chosen for this project due to the design perimeters of the flooring, precast treads, and precast bar tops. The flooring is 3/8" Epoxy terrazzo with a high percentage of mother of pearl in the field, and the use of Fribel synthetic aggregate for the highways and street signs. The design is a road map with highway numbers and bypasses around state capitals that are indicated by a star design. The bypass/city designs were prefabricated and set in place with the connecting roadway being completed in the field. The precast treads and bar tops are unique as they were poured with a clear resin and colorful aggregate, and installed over back-up lights to create a truly unique installation.

National Terrazzo & Mosaic Association 1998 Honor Award

JOB OF THE YEAR

Ohio State University — Schottenstein Arena Columbus, Ohio

ARCHITECT
Moody / Nolan Ltd., Inc.
Columbus, OH

DESIGNER/ARTIST
Alexis Smith
Venice, CA

A marvelous new level of complexity in epoxy terrazzo has been reached with breathtaking results. The new University arena features 71,000 square feet of terrazzo in school colors throughout the concourse areas.

The highlights, however, are in the large terrazzo floor murals at the entrance and circulation areas. Based on photos of past Ohio State athletes, each image was drawn on the concrete by the artist. Sixteen-gauge zinc stripping was placed wherever the artist had drawn lines, some within 1/2" of each other. Some areas resulted in an amazing amount of strips per square foot.

The murals used six different shades of gray (white to black) along with the school color red. Glass and Mother of Pearl chips were also used. Each color was painstakingly poured into its assigned area, creating stunningly detailed images of crowds, facial shading, and depth.

Any person visiting this arena will immediately be drawn to the floor and these masterpieces.

National Terrazzo & Mosaic Association
1998 Honor Award

The River Centre Rotunda
St. Paul, Minnesota

ARCHITECT
Hammel, Green & Abramson
Minneapolis, MN

DESIGNER/ARTIST
Philip Larson
Minneapolis, MN

The River Centre Rotunda Project was commissioned by Public Arts St. Paul to provide a floor system which portrayed the Mississippi River, which runs through St. Paul. The architect and owner chose terrazzo because of durability in a high traffic area and infinite design possibilities. The result was Philip Larson's design "Fish Eye Perspective of the Mississippi; Sunrise." This design featured 25 different brilliant colors incorporating the primary colors, violet, blue, green and yellow.

National Terrazzo & Mosaic Association
1998 Honor Award

Massachusetts Institute of Technology
Buildings 16 and 56
Cambridge, Massachusetts

ARCHITECT
Ellenzweig Associates, Inc.
Cambridge, MA

A richly textured eight-color epoxy terrazzo floor and base was inspired by images of fractal geometry and expresses the varied movement patterns of people as a piece of contemporary artwork. The floor unifies the entire experience, essentially linking together the project's elements of futuristic, high tech art; the hologram, media wall, edge-lit glass panels, and LED display. In this way, the building seeks to celebrate the integration of art, technology and architecture; blending the past, present, and future. In addition, each niche along the north wall is marked with a portion of a 64-bit binary code puzzle, which playfully stretches across the entire length of the two buildings. Only the most cunning students solve the puzzle and discover the irony of the floor message: *To explore the places on a campus that are not usually accessible* and *To work at or study a subject not especially for any academic gain.* These phrases define the art of *Hacking*, a long standing tradition among MIT students of staging harmless, yet grandiose campus-wide pranks. Considering its high level of durability and almost unlimited potential for pattern and color, terrazzo was the logical choice for the floor of this heavily travelled corridor at the Institute.

National Terrazzo & Mosaic Association 1998 Honor Award

Ontario International Airport — Ontario, California

Terminals 2 and 4

ARCHITECT
DMJM Architecture
Los Angeles, CA

DESIGNER/ARTIST
Robin Strayhorn
Los Angeles, CA

To absorb the overflow airplane traffic at LAX, the City of Los Angeles built the new Ontario International Airport next to the old Ontario Commuter Airport. The first phase of construction included terminals 2 and 4, which were spaced to allow for future expansion of terminals 1 and 3. The system of terrazzo used is a 3" thick sand cushion underbed, topped with 3/8" of epoxy terrazzo. There is a total of 76,000 SF of terrazzo in this airport, including large areas of artwork in both terminals. The primary terrazzo color throughout most of the airport is a stark white, which is broken up every 50 feet by a two-foot-wide band of stainless-steel diamond plate. Now the artwork colors have 25% colored glass and Mother of Pearl aggregate.

National Terrazzo & Mosaic Association 1998 Honor Award

Red and Charline McCombs Campus Center — Southwestern University, Texas

ARCHITECT
Hastings & Chivetta Architects
St. Louis, MO

The architect specified sand cushion terrazzo in this project with the thought of durability and ease of maintenance. Knowing that this student center will have thousands of students utilizing this facility on a daily basis, terrazzo was selected. A county map at the stair atrium depicts rivers, roads, towns and history of the county. What makes this unique, is that the roads utilize a double 16-gauge zinc strip spaced at 3/8" wide. The rivers use a double 16-gauge strip spaced at 1/2" wide. The rivers and roads curve and turn, making the installation more difficult. All lettering is solid stainless steel—water jet cut out in the architect's special font. Using the parameters of durability and maintenance—the architect's only choice was terrazzo!

2318 Ocean Front Walk
Del Mar, California

ARCHITECT
David Humphries

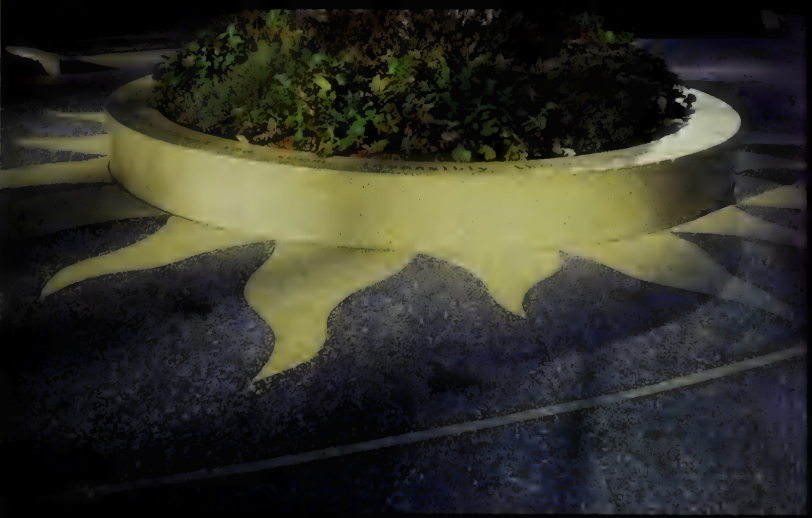
DESIGNER/ARTIST
Zandra Rhodes

Terrazzo was used on this project because it is a relatively easy medium to achieve this wavy pattern and because it is beautiful and versatile. Foam was laid in the floor in a pattern determined by the designer, Zandra Rhodes. When each color had dried, the next color's foam was removed so more terrazzo could be poured. Throughout the floor, there are chips of marble, mirrors, stones, and other bits and pieces, resulting in a delightfully whimsical floor.

Virginia Institute of Marine Science Courtyard, Gloucester, Virginia

ARCHITECT AND DESIGNER/ARTIST
Pompei, Inc., Newport News, VA

The courtyard at Virginia Institute of Marine Science's new Marine Toxicology Lab was a boring grass courtyard until an alumnus who was looking for a good tax deduction asked the terrazzo contractor to design a mural of the Chesapeake Bay. They instantly came up with the idea of rustic terrazzo since it was outside and needed to be slip-resistant. All design work was done in-house with CAD drawings. The initial design was actually pulled off of a map found on the internet and downloaded to Pompei's CAD system. The terrazzo is made of 100% gray cement. The land is made with Coral Spar chips and the water is made with Cactus Canyon Green chips.



Quadrant Lake Union Center
Seattle, Washington

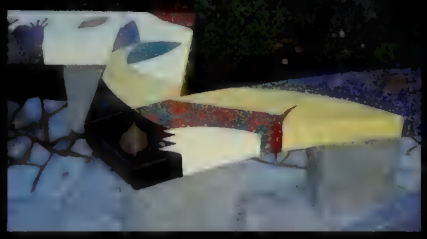
ARCHITECT
NBBJ Group
Seattle, WA

DESIGNER/ARTIST
Judith Caldwell
Seattle, WA

Terrazzo was the material of choice for the main outdoor gathering place at this office complex. The ability of terrazzo to vary texture from rustic walkingsurfaces to highly polished circular planters and benches appealed to the owner. Terrazzo also allowed the commissioned artist to easily include numerous inlaid bronze castings and text, giving definition to the planetary solstice design, while glass and mother of pearl chips provide sparkle and depth to complete the image.

National Terrazzo & Mosaic Association 1998 Honor Award

International District Village Square Seattle, Washington



Special Award

DESIGNER/ARTIST

Norie Sato / Stuart Nakamura
Seattle, WA

Color and design make the three seating benches the defining element of this building's Entry Courtyard. The vibrant colors of resins, glass, synthetic, mother of pearl, and marble chips attract patrons and passersby in for a closer look, revealing unique images of meticulous detail. A truly innovative use of terrazzo.

National Terrazzo & Mosaic Association 1998 Honor Award

Bank One Ballpark Phoenix, Arizona

ARCHITECT AND DESIGNER/ARTIST

Ellerbe Beckett, Bill Johnson, and Diane Jacobs, Phoenix, AZ

Although this is home to the Arizona Diamondbacks, the building belongs to the entire community who helped build the stadium. Baseball is celebrated everywhere, but this spot is reserved for a much broader and all-inclusive theme. The artwork in the center of the rotunda is a map of the State of Arizona, delineating each of its counties and most populated cities. The design is influenced by historic maps of the region, the colors found in Native American artwork, and the State's varied natural landscape. The map is oriented on axis with the main entry off of Jackson street, and forms a visual path leading the visitor straight into the main concourse of the stadium. Terrazzo was selected as the perfect material for this piece, as it across both indoor and outdoor areas, achieves a wide spectrum of color, variety in line, shape, and form, and represents materials from the earth. One of the main examples of a vast collection of artwork within the new stadium, it is among its most visible, and easily recognizable visual statements. The outcome has received wonderful reviews; it is frequently mentioned as one of the most memorable parts of a visit to this new building. The permanence of the terrazzo medium allows the artwork to glow within its cylindrical home, and promises to be enjoyed by thousands of visitors for many generations to come.

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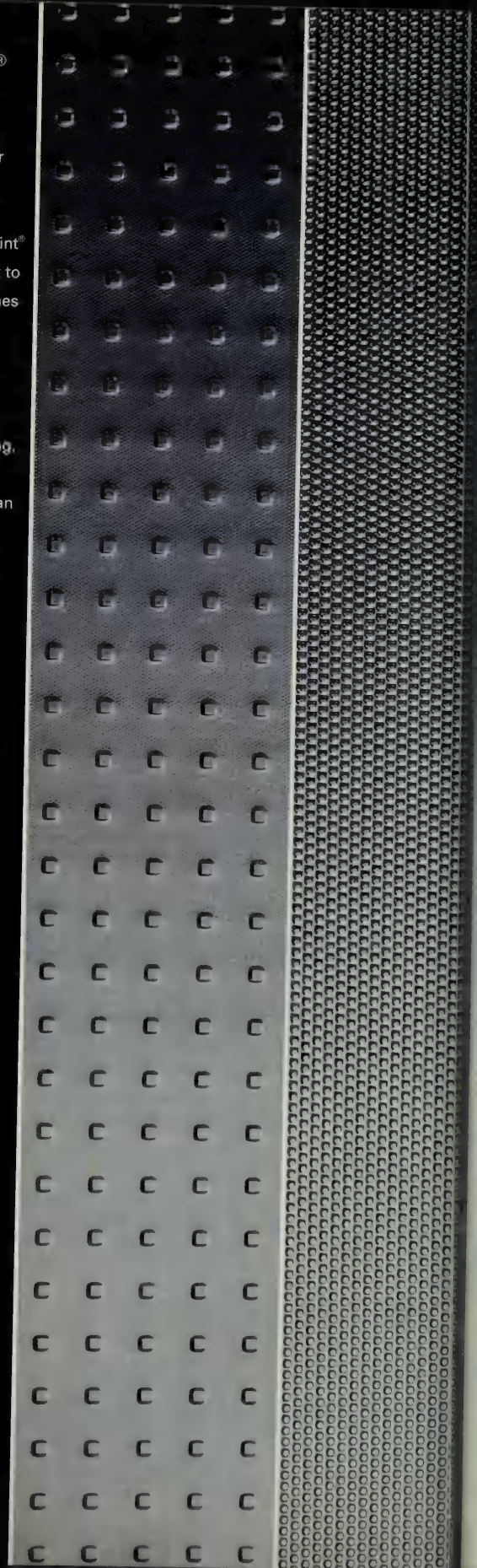

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CIRCLE 24 ON INQUIRY CARD

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Architect: James R. McVicker Jr. AIA

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Color: Hemlock Green
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Pinehurst Resort & Country Club recently completed its new clubhouse for its Centennial Course No. 8. The clubhouse, designed by architect James R. McVicker, evokes the rich tradition of Pinehurst and its position at the top of a hill makes it visible from all corners of the course. The project features over 9,000 sq. ft. of Snap-Clad panels with a Hemlock Green PAC-CLAD finish. McRae Roofing Company of Asheboro, North Carolina installed the panels.

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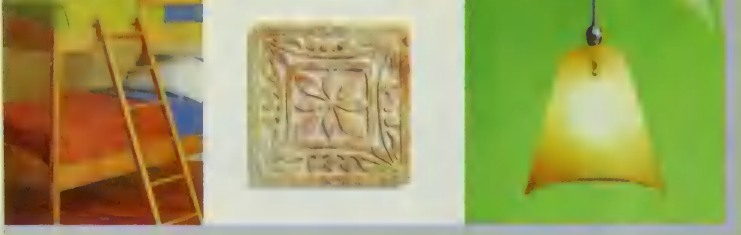

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CRITIQUE Most contemporary architects have callously abandoned the social agenda set by the founders of Modernism.

BY ROBERT BENSON

In June, European American Realty Ltd., a Chicago-based developer, announced its intention to build the world's tallest skyscraper in Chicago. The main purpose of the 112-story shaft—being designed by Adrian Smith, FAIA, of Skidmore, Owings & Merrill (SOM)—is to provide high-definition television transmission from communications antennae on its pinnacle.

In a way, the design is a late-century Modernist interpretation of the Vesnin brothers' 1924 competition entry for the Moscow office of the *Leningradskaia Pravda* newspaper, a modestly scaled project that, by presenting the news on its facade, would have interacted with passersby and rewarded their attention. In contrast, little engages human beings where the proposed 1,537-foot-high tower in Chicago meets the street: glazed parking decks occupy its first 11 stories and the retail spaces are underground. The street, rather than being a social and political arena that a building must address, is ignored as mere necessary infrastructure.

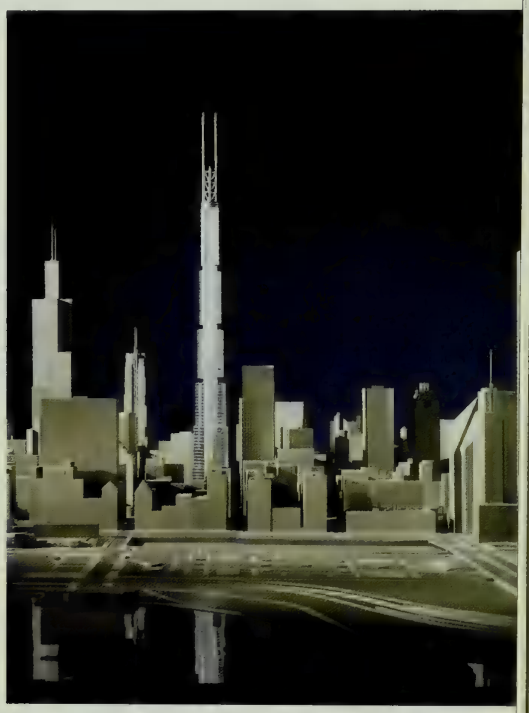
The design underscores the degree to which today's Modernism has abandoned the movement's early belief in a transforming social agenda. And it begs the question: Ought architecture to have a social agenda or is that now an anachronism? Whether it is conceived as such, architecture is always a political statement for those who design it, buy it, use it, or interact with it. Any effort that requires such large expenditures of money, materials, resources, utilities, labor, planning, and conceptualization is a political and social act by its very nature. When we fail to understand this or refuse to acknowledge it, we relinquish authority and allow architecture to become the instrument of someone else's political and social position.

Robert Benson, PhD, is a professor of architectural history and criticism and chair of the Department of Architecture and Interior Design at Miami University in Oxford, Ohio. He is the former architecture critic for the Detroit News *and the* Cincinnati Enquirer.

Detached and dismembered

Today's Modernist architecture is beholden to the vagaries of international finance, unstable market trends, and rapidly diminishing sources of cheap labor. It is detached from any semblance of social agenda or cultural vision. It is a style, a signature, an image created by teams skilled in business operations and trained to partition off their thinking from social and political meaning. It is subservient to clients who often measure themselves against their competition by the height of their towers. Modernist production looks much the same in Southeast Asia as it does in Chicago—evidence of its detachment from specific cultural conditions.

By contrast, Modernism in Europe arose as a response to the needs of post-World War I reconstruction and the call for a new social order. It insisted that architects do more than build, that they facilitate sociopolitical and cultural changes through architectural form. It inspired manifestos, demanded social justice, established minimal standards of housing, created efficient building forms for education and government, and identified itself as an agent of resistance to the status quo. It appropriated the working class as its client and social democratic government as its patron. Its design objectives included function, flexibility, and lightness; the use of industrial materials, processes, and images; and the development of urban context. One might criticize the audacity, irreverence, or naivete of the early Modernists, but not their hopes for a better world and their willingness to stake a personal and professional claim in achieving it.



If it is built, SOM's tower on Chicago's Dearborn Street will be the world's tallest building.

Stateside politics

Unlike in Europe, the earliest Modernism in the U.S. responded to the economics of 19th-century liberal capitalism and its burgeoning business culture. As part of this culture, the commercial work of Burnham & Root, Frank Lloyd Wright, and Albert Kahn focused on making business and investment work well and on supporting a vibrant and volatile industrial economy. Social justice was the province of government or religion, not business, and certainly not architecture. By the 1920s, business architecture clearly expressed laissez-faire capitalism in its luxury, eclecticism, and exuberance; it culminated in a final Art Deco flourish just as the stock market crashed.

During the Depression, Henry-Russell Hitchcock and Philip Johnson, FAIA, introduced European Modernism to the American architectural profession and public in a famous 1932 exhibit, "Modern Architecture: International Exposition," at New York's Museum of Modern Art (MoMA). Although the

two architects were well aware that European Modernism was intrinsically connected to a social agenda, they chose to ignore it in their exhibit and presented the new architecture as the flower and fulfillment of precursors like Wright, Louis Sullivan, Hendrik Berlage, and Peter Behrens. They intentionally focused on the formal characteristics of European Modernism, arguing that its stylistic traits had gelled by 1922, were already international in scope, and could therefore be labeled "the style of the 20th century."

Only Lewis Mumford addressed the social housing concerns of Modernism in the MoMA exhibit and its catalog. Mumford believed, along with architects Clarence Stein and Henry Wright, that Modernism was principally an embodiment of a social vision. This position was supported by such critics as Catherine Bauer and Douglas Haskell, who warned readers of *The Nation* that the MoMA exhibit skewed the picture of Modernism. This polarization into two contradictory positions—a particular style without content versus content without a particular style—set the stage for American architectural debate in this century.

Welcome to the Bauhaus

After the Bauhaus was shut down by the Nazis in the early 1930s, practitioner-educators such as Walter Gropius, Marcel Breuer, and Ludwig Mies van der Rohe emigrated to the U.S., seemingly ready to transplant the social vision of Modernism at Harvard, the Illinois Institute of Technology, and elsewhere. Indeed, the social agenda became embedded in architectural education as a result of their efforts and convictions. However, the Modernism that was taught and practiced took firmest root in the capitalist economic climate following World War II; architects applied the design principles of the Bauhaus to corporate commissions, effectively subverting the social agenda of Modernism.

By the 1950s, graduates of American architectural schools, including Johnson himself, were working within a corporate culture that was more concerned with functional flexibility, cost efficiency, and image than with social agenda, except when a social agenda served business interests. Corporate capitalism exploited the Modernist glass box as a symbol of its own power and created what Ada Louise Huxtable would later dub an "urban vernacular" in city business districts. The resulting competition for unique corporate personae and the reaction against the Modernist boxes of the 1960s and '70s played itself out against a growing critique leveled by Postmodernism.

Revolt in style

During the '70s, the OPEC oil embargo offered environmentalists some opportunity to resuscitate social responsibility. Civil rights and the growing feminist movement seemed to offer the possibility of a renewed concern for social justice. Tax credits for revitalizing historic buildings seemed to offer a new way to regenerate urban centers in the wake of the failure of slum clearance. The globalization of capitalism, the dramatic rise in electronic communications, and the emergence of Australasia as a financial power spurred a reassessment of worldwide Modernism through critical regionalism, as elaborated by Kenneth Frampton.

THE NOTION OF A SOCIAL AGENDA TODAY SEEMS TO BE ASSOCIATED WITH POLITICAL CORRECTNESS.

During the 1980s, the renewed emphasis on individualism and the private sector was mirrored in design directions that included corporate practices based on the model of SOM, high-tech design (Renzo Piano, Richard Rogers, Nicholas Grimshaw), reinterpretations of earlier Modernism (Arquitectonica; Richard Meier, FAIA), and more sculpturally dramatic and formally complex work (Coop Himmelblau; Frank Gehry, FAIA; Morphosis; Peter Eisenman, FAIA; Zaha Hadid). Underlying this plurality was a common disregard for the social responsibilities of architecture. Architects practicing under the aegis of a Modernist social agenda—Aldo van Eyck, Lucien Kroll, Max Bond, or Michael Pyatok, FAIA—or within the context of environmentally conscious design (William McDonough, FAIA) were few and far between.

The Fagus Factory, designed by Walter Gropius in 1910, is an icon of early Modernist design.

Educating by design

Excepting the environmental movement, assuming social responsibility remains principally the domain of architecture schools. Business-practice issues are of far greater concern for professional organizations than debate about social or political meaning. In fact, the notion of a social agenda today seems to be equated with political correctness. It is much safer to treat architecture as a financial investment and image, or as a functional and mechanical object, than as a conscious and political statement. As a result, architecture becomes a statement of consumerism. Architects proudly identify themselves as offering a full range of services, a notion that has eroded their status as a professional with a specialized education, experience, and knowledge who can provide a vision and appropriate form for a project and relate it to a larger physical and cultural environment.

We can reinvigorate Modernism's social agenda by changing the way we teach design. When we acknowledge that design, like information, is never neutral but always serves a point of view, we can help students develop points of view, much as we expect them to develop visual results. We can further teach our students that as design professionals, they should conduct themselves as collaborators, not as servants who simply reflect their clients' value systems. We can introduce students to design-build experiences in low-income and ethnically diverse communities where the social realities of architecture become more clearly defined by their differences from conventional design culture.

We should also demand architectural criticism that goes beyond expounding a theoretical position, that transcends formal analysis, and that does not pretend to be the arbiter of taste. We should demand that critics ask penetrating questions about the social and political effects of buildings, whom they empower, and how they demonstrate sensitivity to the environment.

We should seat incisive boards of review and building commissions whose members are willing to risk being unpopular to guide public officials, investors, developers, and designers toward the best possible architectural solutions. We need architects and designers to serve on city councils and commissions to establish responsible standards of design and construction and to speak out against irresponsible planning and development.

Unless we make educational and professional commitments to promote socially and politically responsible architecture, we will inadvertently promote the opposite. Reexamining the Modernist social agenda and adapting it to our current conditions may not change our world immediately, but I have yet to hear a better alternative. ■

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CIRCLE 27 ON INQUIRY CARD

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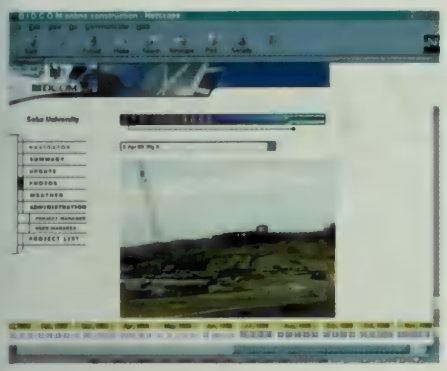
DIGITAL ARCHITECT "Internet-based project collaboration allows farflung team members to design buildings without flying around to meetings."

BY JERRY LAISERIN, AIA



PCN software acts like an online job trailer, providing an Internet location to check project progress.

Shifting business communication from paper media, such as fax, mail, and next-day and same-day couriers, to electronic media, such as the Internet and World Wide Web, enables these communications to flow faster, cheaper, easier, and more accurately. Still, designing a building is more complex than searching for music CDs, airline tickets, or home mortgages. Web-based architecture must facilitate and document long-term collaborations among multiple players in the design industry.

On an average project, participants, including the lead designer, general contractor, consultants, and subs, are thrown together by competitive bidding, chance, and choice. They differ wildly in their technological abilities and willingness to share information. During the life of a project, in an atmosphere of cost and time pressure that is always competitive and occasionally adversarial, they exchange hundreds or thousands of documents, many of them created by incompatible computer programs.

By leveraging the Web's universally interchangeable file formats, affordability, and instant availability, project teams sidestep incompatibility issues, costly paper-handling, and slow turnaround. And if things go smoothly, they may even walk away liking each other. Like commercial Web pages, private Web sites for individual projects are information repositories, message clearinghouses, and business transaction hubs. Web browsers provide the software gateway for exploring such project networks.

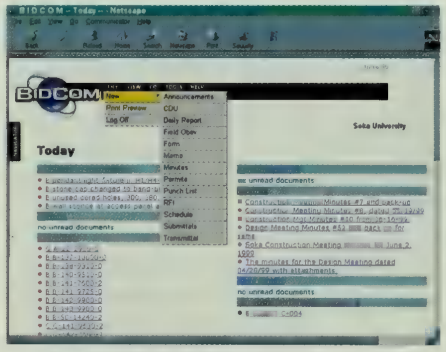
Contributing editor Jerry Laiserin, AIA, consults, writes, and lectures about the impact of information technology on the practice of architecture.

Projects on the Web

Collections of browser-accessible information inside an individual firm are called intranets [March 1999, page 39]. When two or more separate entities—some combination of client, architect, consultants, and contractors, for example—share browser access, the underlying collection of information is called an extranet. Because these sites can be hosted on Web servers inside or outside a firm, design-and-construction extranets are more aptly called project-specific Web sites, project Webs, or project collaboration networks (PCNs).

The simplest PCN functions as a repository for documents, such as drawings, memos, and meeting minutes. These are accessible, once the password is entered, to project participants. Everyone can view, copy (download), or save (upload) documents using nothing more than a Web browser.

Clients, for example, can view CAD drawings online, even without having CAD software on their computer. Some PCNs add the ability to pan and zoom across CAD files or to annotate and redline these drawings. These extras necessitate helper programs, usually available for free, that are downloaded by the user and plugged in or automatically served to the browser.



A personalized message center acts like an E-mail system, displaying and tracking messages.

PCNs may also include a message center, a place for posting and archiving memos and notices about items for action or review. Messages can be broadcast to the entire team, a subgroup within the project, or a specific individual. Most PCNs track who has read which messages and present the latest unread messages first, like an E-mail system.

The message center usually appears on each participant's personalized home page or start page, displayed by the software every time that person logs on. This page also includes directories of contacts, pointers to documents, and other information that would need to be quickly accessed. The message center replaces the confusing and easily misfiled array of faxes, E-mails, phone messages, and paper memos that characterize non-Web projects.

Finally, PCNs can provide a hub for project workflow, such as tracking requests for information, submittals, and shop drawings. Most project contracts impose legal obligations to handle such transactions in a formally prescribed sequence and a timely manner. As a result, logging and routing documents up and down the chain of command consumes an inordinate amount of the project manager's time and attention. A PCN makes this workflow instantaneous, self-documenting, and transparent—anyone with browser access can verify whose response is required next. This also frees up the project manager.

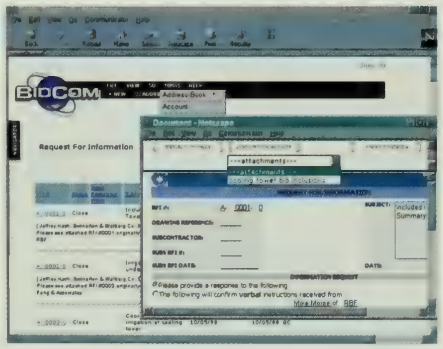
Buy, build, or rent

PCNs can be hosted on a Web server operated by one player on a project team or by an outsourced service provider. As the team mem-

ber involved in the project from beginning to end and the one generating a significant portion of the drawings and other documents throughout the project, the architect often is the participant best suited to host the project Web site.

Many firms want such control over their own data and client/consultant access, but not the headaches and costs of developing and maintaining homegrown software. Among the few packaged programs available for this need is ActiveProject from Framework Technologies (www.frametech.com), [May 1999, page 275].

Hammel, Green & Abrahamson, a 460-person A/E firm in Minneapolis, relies on ActiveProject to coordinate design guidelines and CAD standards with a half-dozen other major-role A/E firms and multiple consultants on 15 to 20 separate projects at the Minneapolis-St. Paul airport.



Browser-based forms in PCN software ease tedious chores, like logging submittals and RFIs.

According to HGA principal Bill O'Malley, AIA, installing ActiveProject was faster and less expensive than developing software in-house. The packaged program also overcame the client's concerns regarding privacy and security when entrusting project data to a third-party service.

Large firms, with sufficient in-house software development expertise and information technology (IT) support, often choose to program such software themselves. According to Brian Ware, applications manager at Callison Architecture, a 450-person firm based in Seattle, "Developing our own PCN allows a strong architectural focus, rapid response to changes and customization, and an individual brand identity for our firm and our projects."

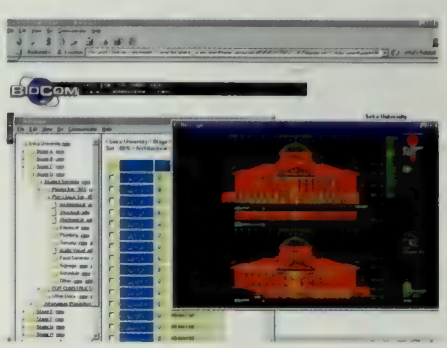
In contrast, some commercial PCN software "reflects the contractor's and owner's goals and work patterns more than the architect's," Ware notes. "Plus, packaged software limits you to the vendor's choice of features and updates. Many outsourced services make their own name and logo more prominent than the architect's."

Hosting their own project Web servers, whether prepackaged or custom-built, can strain the resources of firms with a limited technology infrastructure and information technology staff. Clients and contractors on Web-based projects expect reliable access 24 hours a day, seven days a week, which requires that the host have the following: a high-speed direct Internet connection; high-capacity servers; and a technology support staff on call around the clock.

For firms unable or unwilling to make that kind of investment, nearly three dozen businesses have sprouted in the last 18 to 24 months to provide PCN services on a rental basis. Typical service fees start at a few hundred dollars per project per month. But this delivers plain-vanilla services offering little more than the Web equivalent of a filing cabinet and a memo pad. Fees may run as high as $1,500 per project per month for unlimited users on a full-featured service, which includes elaborate annotation and messaging options, built-in structured workflow, and other features.

Making it work

James Brogan, AIA, director of technology at 130-person Hardy Holzman Pfeiffer Associates (HHPA) in New York City, has built and hosted his firm's own project Web sites and also experimented with several PCN rental services. He's found that the success of any type of project network depends on "getting the whole team up to the same level of connectivity."



Like office flat files, PCN software offers an easily referenced repository of project drawings.

Participants with slow dial-up connections will not be happy with the experience." A five-minute download via HHPA's digital T-1 link to the Web takes two to four hours by conventional modem.

At Cambridge, Mass.-based ADD, Inc., IT Director Jill Rothenberg also has tried multiple services for her 150-person firm. "The projects that have the strongest commitment by the entire team to use the technology consistently benefit the most. We do a lot of education of our clients and contractors, but there's only so much support IT can provide and only so much the architect can control."

One way to solve the commitment issue, according to Kavita Gupta, a project manager with 25-person Summit Architects in Santa Monica, Calif., is to "require in the contracts that everything on the project be digital." She cites her own firm's success using the InSite service from BidCom (www.bidcom.com) to manage a multibuilding, fast-track project with eight phases of construction.

In Manchester, N.H., the 32-person architecture/interiors firm Lavallee Bensinger uses the ReviewIt AEC service from Cubus Corporation (www.cubus.net). Stephen Clayman, AIA, vice president at Lavallee Bensinger, calls ReviewIt affordable and simple, but adds that "there is still labor overhead" in the steps required to get offline drawings into the online system.

Now what?

While first-generation PCN services require conscious effort to publish or upload design information to the Web, the emerging trend is toward more direct and automatic linkage between tools for making designs and tools for sharing them.

Bentley Systems, maker of MicroStation CAD software, already offers a system called ProjectWise (www.projectwise.com) that eliminates the publishing steps that fall between creating a design model and sharing it over a project network. The forthcoming ProjectPoint service (www.projectpoint.com) from Autodesk, maker of AutoCAD, will build on Autodesk's CAD expertise to better integrate the processes of producing design documents and distributing them on project networks.

Wimberly Allison Tong & Goo, a 220-person architecture/interiors firm with four international offices, relies heavily on the ProjectNet service from BlueLine/Online (www.bluelineonline.com). The company is currently beta-testing ProjectPoint. Chief Information Officer Lawrence Rocha predicts that PCNs "are paving the way for centralized building-data models. This technology provides a foundation, a single place, where intelligent building data can exist and evolve along with the project. Over the next couple of years every sizable project will require data-centric project sites that allow design teams to collaborate more effectively." ■

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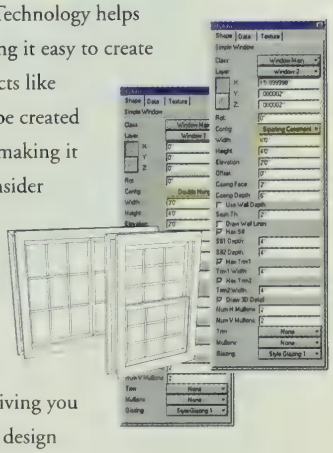

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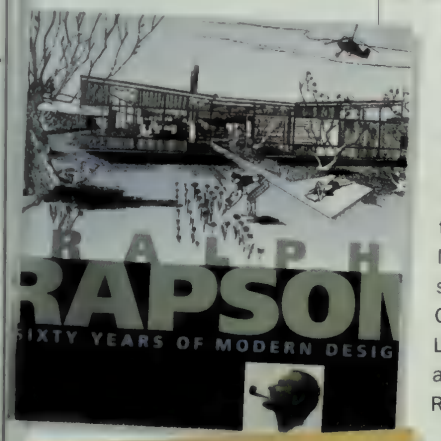
BOOKS Reconsidering two often overlooked Modernists whose regional bases kept them out of the national spotlight.



Ralph Rapson: Sixty Years of Modern Design, *by Jane King Hession, Rip Rapson, and Bruce N. Wright. Foreward by William Pedersen. Afton, Minn.: Afton Historical Society Press, 1999, 240 pages, $35.*

Ralph Rapson is a Minnesota institution, widely regarded as the state's most influential Modernist architect. But unlike such Minnesota icons as Garrison Keillor and mythical Lake Wobegon or that eccentric artist formerly known as Prince, Rapson hasn't entered America's mainstream.

Perhaps that's because he spent 30 years of his professional career in the quiet groves of academia, where he led the University of Minnesota's architecture program from 1954 to 1984. Yet Rapson, who has taught and inspired some of the state's most successful architects, is more than an academic, as is shown in *Ralph Rapson: Sixty Years of Modern Design*, which chronicles his career.

With each of three authors tackling different chapters, the book is—as with so many monographs—largely uncritical, told essentially through Rapson's interviews with the authors. Yet much of what Rapson says is fascinating reading, a juicy who's who of architecture.

Rapson came of age professionally when many of Modernism's European proponents, fleeing the rising current of Nazism, came ashore in America. Rapson knew many of the era's big players—Ludwig Mies van der Rohe, Eliel Saarinen, Sibyl Moholy-Nagy—and through his anecdotal recollections, we reacquaint ourselves with these masters, as well as with such figures as Charles Eames, who were just emerging at that time.

Rapson himself was a rising star in the 1940s and early '50s, having designed lines of chairs for Knoll and foreign embassies in Stockholm and Copenhagen. In 1945, at age 31, he was the youngest architect to participate in *Arts and Architecture* magazine's Case Study House program with his design for the Greenbelt House.

Now 85, Rapson holds the dubious distinction of having outlived many of his most famous Minnesota buildings and projects. The 1963 Guthrie Theater in Minneapolis is largely unrecognizable since a recent renovation replaced the idiosyncratic facade with a plain-Jane glass curtain wall. The Philip and Eleanor Pillsbury house, his best-known residential work, was razed a couple of years ago. And only one portion of his ambitious Minneapolis urban-renewal master plan from the late 1960s and early 1970s was completed, namely the cluster of high-rises at Cedar Square West.

The publication of the book coincides with exhibitions of Rapson's career at the Frederick R. Weisman Art Museum and the Minneapolis Institute of Arts. The one real drawback to this handsomely produced volume is that it's printed in black and white. Rapson is particularly revered for his architectural drawings and renderings, especially his beautiful watercolors recording famous sites from around the world. The book misses the full impact of these works. So readers will learn how Rapson first met Moholy-Nagy in a Chicago cafe, but not how he used color on paper. *Eric Kudalis*

Albert Frey Houses 1 + 2, *by Jennifer Golub. New York: Princeton Architectural Press, 1999, 84 pages, $35 (cloth), $18 (paper).*

Slide the coral-colored hardcover edition of this book out of its translucent, white plastic case and you enter the hot and cool world of Albert Frey. The Swiss-born Frey, who worked for Le Corbusier before coming to the U.S. in 1930 and settling in Palm Springs, Calif., brought Modernism to the desert and made it seem perfectly natural. The two houses shown here, both designed by the architect for himself on shoestring budgets, reach out to the rugged landscape with overhanging roofs and elegant pool terraces. At the same time, they bring in the outdoors by way of large panes of glass and—in the case of Frey House 2 built in 1964—the presence of a large boulder in the major interior space.

In addition to photographs by Julius Shulman and Charles Wittenmeier, the book has shots Frey took of America's natural and industrial landscape and images from eight-millimeter films he made of the houses. There's also an interview that the author conducted with Frey in 1995, three years before he died at the age of 95. *Clifford Pearson*

Eric Kudalis is the editor of Architecture Minnesota *and the book* 100 Places Plus 1: An Unofficial Architectural Survey of Favorite Minnesota Sites.

Hip Hotels: City, *by Herbert Ypma. New York: Thames and Hudson, 1999, 256 pages, $30 (paper).*

From Amsterdam to Zurich, Antwerp to Vienna, *Hip Hotels* lets style-conscious jet-setters in on a slew of chic places throughout the world to hang their hats. Targeted at travelers with a sense of design more than at architects (no plans are shown, for instance), the book covers 44 of the hottest hotels in 21 of the world's most cosmopolitan cities.

Herbert Ypma, founder of *Interior Architecture* magazine, had the choice gig of traveling to each destination and bringing back more than 600 photographs, most of which he took himself. The photos show detailed views of each locale and try to reveal the individuality of the various hotels. "Whether it be high design or high art, cool kitsch or Zen minimalism, chic loft living or lavish historical revivalism," states Ypma, "they are all completely individual, all quite unlike any other hotel in any other city." The short texts provide fascinating historical contexts and trivia (who knew that Dresden under the GDR was known as the "land of the clueless" because its hilly topography wouldn't let it receive West German TV?). The author also offers detailed information on what you can expect from each hotel in terms of gastronomy, atmosphere, architecture, and even cost.

Despite the frequent regional stereotypes that flaw its text, *Hip Hotels* impresses the reader with the distinct flavor of what a wealthy and stylish traveler's life on the road might be like. *Ingrid Whitehead*

Design Hotels, *by Arian Mostaedi. Barcelona: Links International, 1999, 240 pages, $85.*

Unlike *Hip Hotels*, this book is for architects. Part of the Spanish publishing house Links International's *Architectural Design* series, *Design Hotels* has a large, beautiful format, complete with architectural plans, color photographs, and Spanish translations of all text. The 23 hotels are the work of celebrated architects and designers such as Tadao Ando, Toyo Ito, Paul Andreu, Eduardo Souto de Moura, Michael Graves, and Geoffrey Bawa.

According to Soledad Lorenzo's introduction, the distinction between "design hotels" and the big, glamorous hotels built at the end of the last century (the Ritz in Paris and London, the Plaza in New York) is more than just a new definition of luxury. Lorenzo claims that those grandiose buildings are a result of "the plethoric growth of the bourgeoisie," while the design hotels that emerged in the 1980s respond to "the sensitivity of an elitist and demanding traveler who hopes to find at his destination a special and stimulating accommodation which, despite the fleeting contact, will impregnate his memory as one of the happiest and most outstanding experiences of his journey." (Whew!) That's a tall order to fill, but the 23 choices in *Design Hotels* (of which only one is in the United States) are prime examples of unique and inspired hotel design. *Ingrid Whitehead*

The Favored Circle: The Social Foundations of Architectural Distinction, *by Garry Stevens. Cambridge, Mass: The MIT Press, 1999, 253 pages, $35 (paper).*

In Garry Stevens' view, the architectural profession is divided into two groups: the majority, who build and provide services to clients, and a small minority, the so-called "creative geniuses" or big names who have designed the most "significant" works and seem to get all the attention. But these elite few, suggests Stevens, owe their success not necessarily to genius, but to a variety of factors that have little to do with talent, such as master-pupil relationships and other collegiate connections. Further, the breach between this group and the rest of the field causes discord throughout all levels of the profession.

Propelled by his own experience as a student and architecture school teacher, he uses what he calls "sociological scalpels" to dissect the profession, its history, and its schools. In the process, he adopts the methodology of sociology—including an array of graphs and charts—to support his position. He is not as objective, however, as those methods would imply.

While Stevens stops short of calling for affirmative action for underprivileged architects, he does shed light on some very real problems, like why so few female graduates stay in practice and why the most successful architects are from upper-class backgrounds. The book successfully analyzes the profession and brings to light many of its problems, but apart from proposing that the favored circle just go away, it offers few practical solutions. *Christine Sheridan*

American Classics View-Master Reels, *by View*Productions, 1999, $34 (View-Master with three reels).*

The View-Master debuted at the 1939 World's Fair in New York. The ever-popular child's toy is now making a comeback—with a whole new application. In an eclectic series called "Architectural Classics," the new View-Master from View*Productions presents the work of famous architects in a refreshingly user-friendly format.

The company's first packet in the series, *Bruce Goff: 3 Houses*, showcases the distinctive designs of the Oklahoma architect who lived from 1904 to 1982; the second, *Fallingwater: Wright and the Third Dimension*, documents one of the world's best-known houses.

Each packet contains three reels (seven views on each) featuring 3-D images of exteriors, interiors, and details. Wright himself was fascinated by stereoscopic photography, and in the notes accompanying the Fallingwater reels, he is quoted as saying, "the only photograph that can be made of architecture is three-dimensional."

Wright, it seems, had a point. The images on these reels offer realistic views that are, in some ways, superior to traditional architectural photography, which tends to flatten volumes and distort distances. The View-Master's new incarnation is less a plaything and more an instrument for exploring architectural spaces. Future sets of reels in the series will be available separately. *Christine Sheridan*

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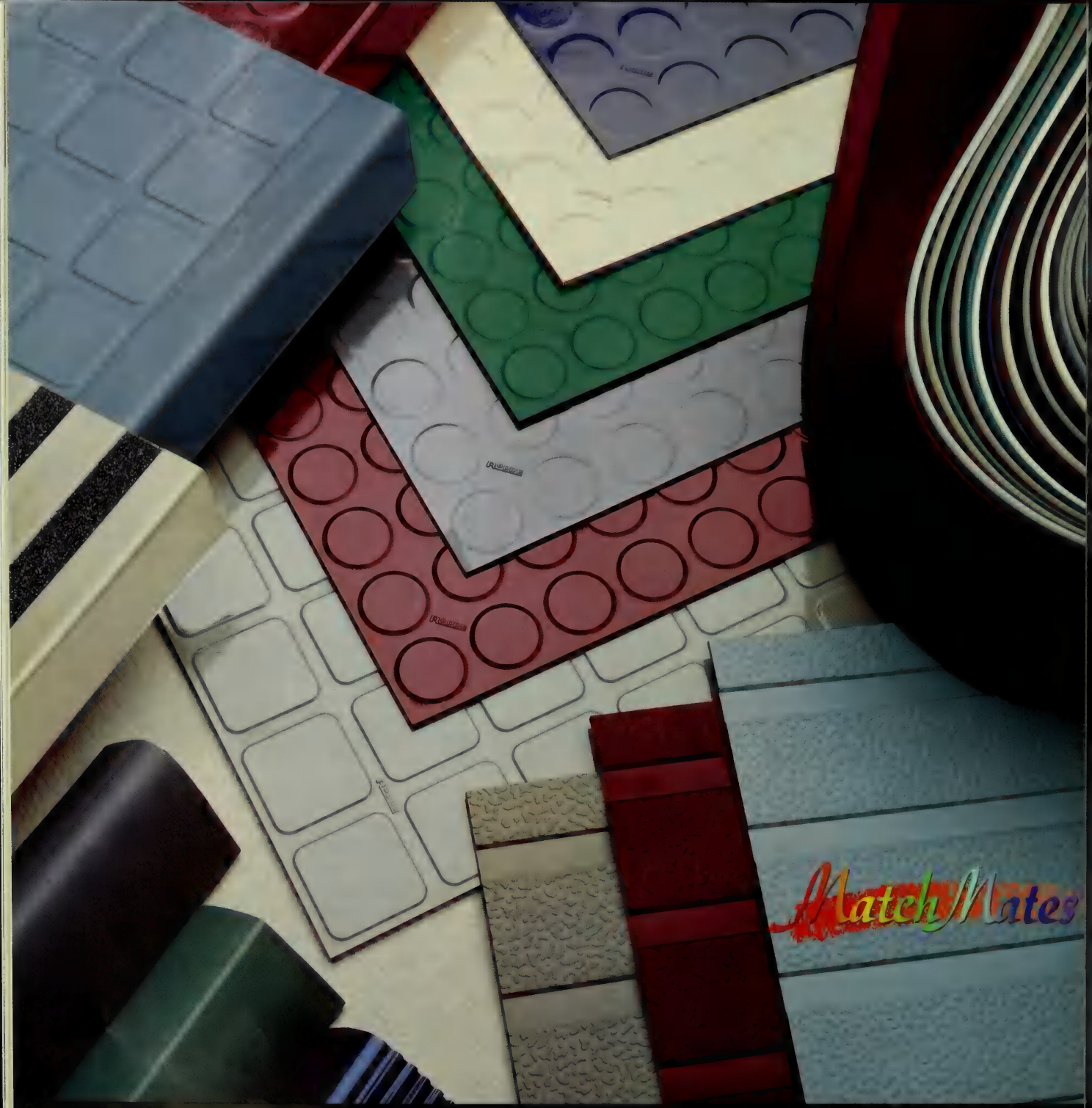

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CIRCLE 31 ON INQUIRY CARD

EXHIBITIONS In Montreal, a Scarpa show offers treasures from the great Venetian architect's drawing archives.

BY SUSAN DOUBILET

"Carlo Scarpa Architect: Intervening with History" is on view at the Canadian Centre for Architecture in Montreal until October 31. It may be remounted at the Museo di Castelvecchio at a later date.

"Carlo Scarpa in Murano: Art Glass by an Architect (1926-1947)" is at the Montreal Museum of Decorative Arts until October 3.

Carlo Scarpa Architect: Intervening with History is the exhibition's 256-page catalog, published by the CCA and The Monacelli Press. The paperback publication costs $45 and includes 206 illustrations, 149 of them in color. It has an introduction by Nicholas Olsberg and essays by George Ranalli, Guido Guidi, Sergio Polano, Alba Di Lieto, and Mildred Friedman.

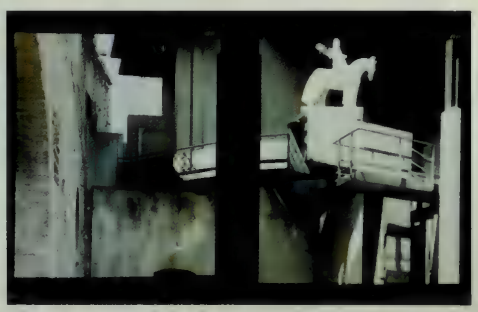
Susan Doubilet is coauthor of American House Now *(Universe/Rizzoli),* Private Architecture *(Monacelli), and the upcoming* European House Now *(Universe/Rizzoli).*

Rarely seen drawings by the Venetian architect Carlo Scarpa form the centerpiece of an intelligent exhibition on view at Montreal's Canadian Centre for Architecture (CCA) until October 31. "Carlo Scarpa Architect: Intervening with History" features 150 key drawings, illuminating the process by which the enigmatic modern master created his highly personal and moving works.

Selected by Nicholas Olsberg, a CCA curator, and Mildred Friedman, a guest curator, from among 16,000 drawings in the Scarpa family archives, the documents include sketches, orthogonal drawings, and layered combinations of both. The images shed light on the ways Scarpa orchestrated movement through his buildings, developed eloquent construction details, and communicated graphically with the artisans who were integral to his design process.

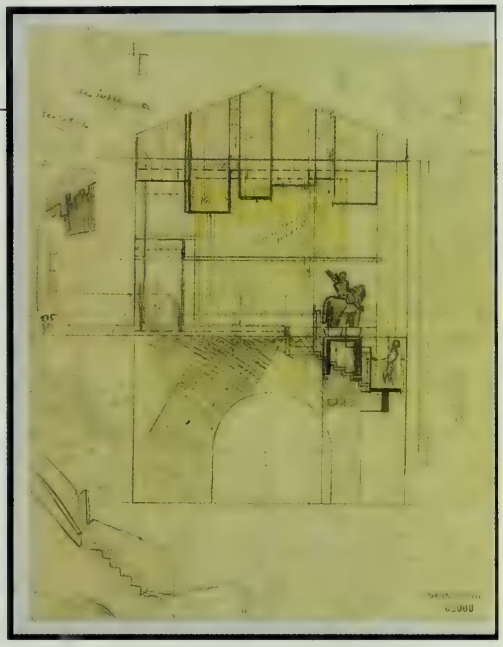
Photos and models, too

The exhibition also explores Scarpa's designs through specially commissioned photographs by Guido Guidi, as well as wood models built under the direction of architect George Ranalli, who conceived the exhibition's elegant installation.



Scarpa, who designed his major works between the 1950s and his death in 1978 at age 72, has remained a somewhat obscure figure in the history of architecture, a condition the exhibition helps redress. The show examines his bold but enlightened approach to preservation and urban interventions and his commitment to craft. Scarpa's interest in materiality and his resistance to a machine-dominated, functionalist aesthetic has been likened to Frank Lloyd Wright's and Louis Kahn's.

The exhibition includes eight works designed between 1953 and 1978, investigating most extensively his two climactic masterworks, the Museo di Castelvecchio in Verona and the Brion Family Tomb near Treviso. The former, the reworking of a building comprising 14th-century and Napoleonic accretions and 1920s renovations, exemplifies the architect's inspired use of demolition and creative addition, his theatricality, and his concept of restless, compelling spaces. The latter represents Scarpa at his most poetic, with inspirational pieces set in exquisite harmony with the landscape.



A section (above) and photograph (below) of the Museo di Castelvecchio in Verona reveal how Scarpa inserted modern elements in the fabric of this 14th-century Italian building.

Enriching the show are controversial buildings, such as the Banco Popolare in Verona, completed posthumously, with strange, reflective-glass window elements on its modernist street facade. Buildings that are idiosyncratic, even within Scarpa's own unusual body of work, also add flavor. Take, for example, the all-white, almost classical Antonio Canova Museum in Possagno and the freestanding Veritti house, which betrays Wright's influence most clearly.

Appreciating craftsmanship

Scarpa, who was not a licensed architect, worked for years as a

The chapel of the Brion Family Tomb in San Vito d'Altivole (left) is one of Scarpa's most poetic works. The family tomb, which was built between 1969 and 1978—the year Scarpa died—combines concrete, glass, and light to masterful effect.
A model in the CCA exhibition by George Ranalli (below) shows Scarpa's reworking of the Palazzo Querini Stampalia in Venice and his elegant bridge leading to the project.

glassmaker and then as an exhibition designer before devoting himself to buildings. These earlier disciplines provide keys to his approach to architecture. From glassmaking he developed an appreciation for the power inherent in the subtle minutiae of craftsmanship. (Examples of his glass designs can be viewed at a concurrent exhibition at Montreal's Museum of Decorative Arts). Designing exhibitions, he refined his almost uncanny ability to create intriguing, unfurling interior sequences.

Scarpa's tendency to envision spaces as a series of episodes is revealed by drawings showing progressive views that look almost like storyboards for films. This cinema-like approach to design, which will surely strike a chord with architects today who eschew the more intellectual, classical disposition of space, also influenced the exhibition's layout. As viewers enter each gallery, they are first drawn to an important photograph standing on an asymmetrically placed easel (a copy of those designed for the Castelvecchio), then to freestanding cabinets containing more photographs or a model on a stand, and finally to the framed drawings on the wall. Within the classical CCA galleries, then, the installation designers recreated, in reduced form, an experience of asymmetrical movement a la Scarpa.

Beyond the layout, however, the exhibition design does not evoke the experience of Scarpa's architecture—unlike, for example, the CCA's exhibition of the works of Peter Eisenman, FAIA, in 1994, which featured an aggressive installation that echoed the personality of the architect by requiring visitors to crouch and peer from awkward angles to see parts of models concealed behind walls [June 1994, page 25].

Toning down contrasts

The installation's low-key elegance is characterized by a monotony in the lighting, color palette, and scale of elements—a setting totally lacking the contrasts and drama for which Scarpa's later architecture is known. "We considered more vigorous display alternatives," says Ranalli, "but rejected them in favor of a more restrained approach."

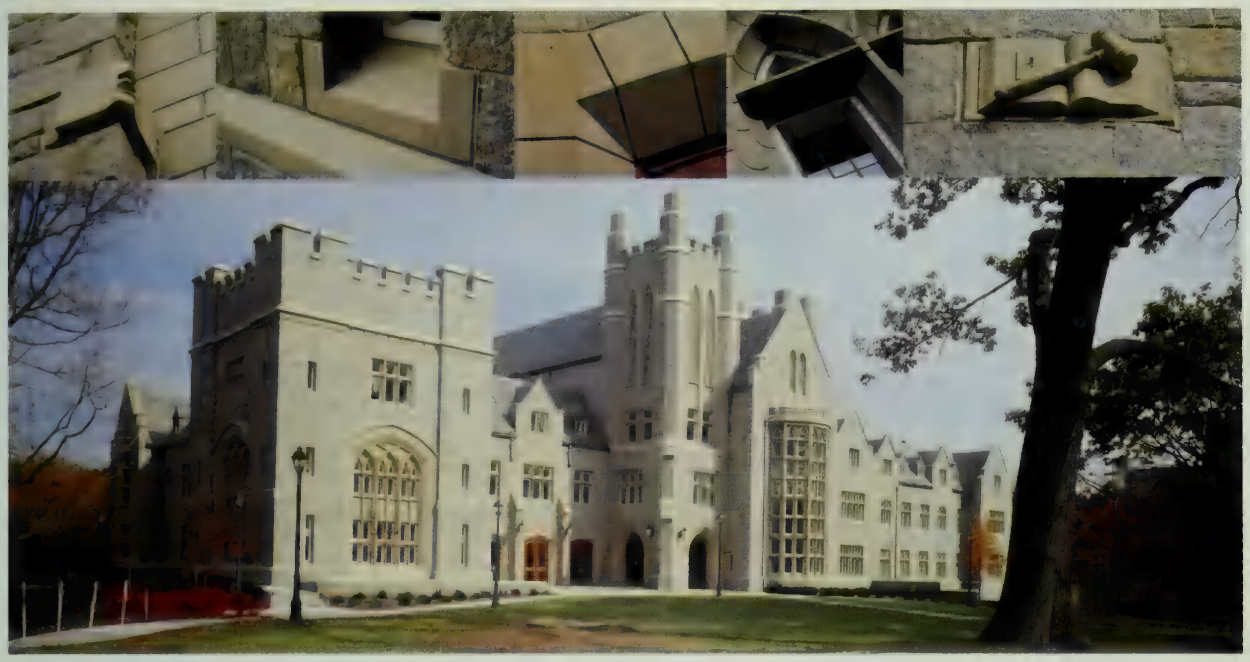
Guidi's photographs of Scarpa's work thoughtfully study the changing nature, over time, of parts of the structures. One wishes, however, that these were more comprehensive, so that the uninitiated could gain a sense not only of the aura but of the totality of the buildings. Furthermore, as exquisite as a number of the images are (such as the view of the bust in the Palazzo Abatellis' Sala Laurana), as a group they convey melancholy. Only occasionally, as with the diptych photos of the Cangrande Statue at the Castelvecchio, do they impart the animation of Scarpa buildings.

To acquire as complete a picture of Scarpa's work as possible, viewers are advised to benefit from all the CCA offerings: bibliographic material placing Scarpa within his time as a rare poet in a predominantly Rationalist architectural environment; a film by British filmmaker Murray Grigor; and a fine exhibition catalog further analyzing the work—though, here again, one wishes for some more documentary photos.

As in traditional scholarly exhibitions, viewers are offered primary and ancillary materials in a relatively sedate context and are then left to construct their own understanding of work by a master who was anything but sedate. ■

Each gallery in the CCA exhibition has a photograph placed on an easel, which is a copy of those in the Castelvecchio (right). Carlo Scarpa stands next to a sculpture of Santa Cecilia on the ground floor of the gallery wing of the Castelvecchio in 1965 (far right).

WE PUT THE CLASS IN CLASSROOM



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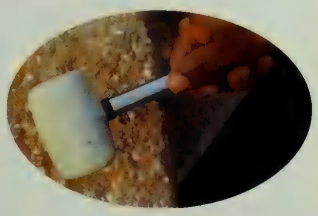

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CIRCLE 32 ON INQUIRY CARD

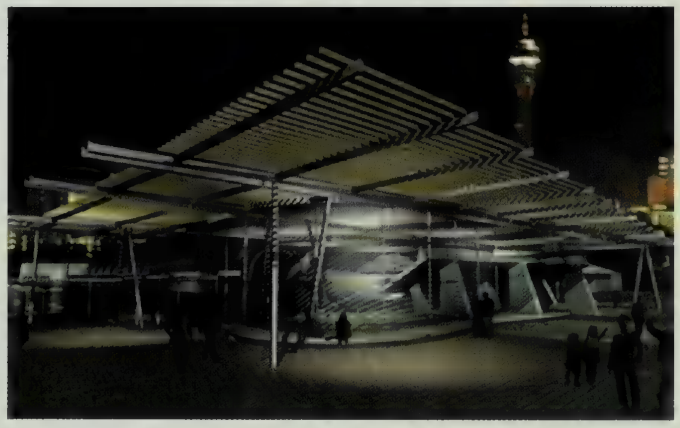
CORRESPONDENT'S FILE A new generation of architects in South Africa struggles to install design ideals of equality and local identity.

BY DAVID SIMON MORTON

David Simon Morton, a former editor at RECORD, is a traveling freelance writer.

Despite its visible array of tall buildings and exclusive shopping malls, South Africa remains a poor country. Most people live in the townships and rural areas—places lacking in almost every amenity—where they were forced to move because of apartheid. Though the old system has been abolished, unemployment is still high, and the resources to effect change are limited.

Unfortunately, most architecture in South Africa ignores these realities. Architects have often imitated the latest European or American fads, no matter the expense, the skill of available labor, or context.



The design for the Constitutional Court uses traditional timber awnings to shade exterior spaces.

A new paradigm

Some architects in postapartheid South Africa do think architecture should more faithfully abide by the country's new aspirations of equality and local identity. This means making the most of what already exists, by rehabilitating buildings and using locally produced materials. These architects ask contractors to provide on-the-job training for the local unemployed, so they'll have marketable work experience when the job is done.

Because of apartheid's practice of exclusion, many postapartheid architects think buildings should look and feel accessible, especially those with public uses. Above all, the local experience should be respected and, when appropriate, incorporated into design. This doesn't represent a new vernacular or a unique style, just a different way of thinking.

Right now, these ideas are driving many small-scale development projects for poor communities, like schools and clinics. They have yet to touch the commercial mainstream of practice, however, and even the postapartheid government, which might be expected to endorse the new architectural perspective, hasn't proved itself that sincere in its support.

Potent symbols

Nevertheless, two recent design competitions for highly symbolic public buildings, the new Constitutional Court and the Apartheid Museum, virtually demanded a more sensitive approach.

The 1994 constitution instituted the Constitutional Court as the ultimate interpreter of the constitution and protector of the new bill of rights. The brief for the design of a building for the court requested, naturally, that it should be a central symbol of a free, democratic South Africa. To underscore the banishment of former inequities, a historic site was chosen: the Old Fort prison complex in midtown Johannesburg, which for a century confined political prisoners of all persuasions, from white socialist mine workers to Mohandas Gandhi to Nelson Mandela.

A novel concept

OMM Design Workshop, based in the east-coast city of Durban, and Johannesburg's Urban Solutions won the competition with a design that shed the monumental pretensions normally associated with important government buildings. Design Workshop principal Andrew Makin says he wants to create a government building "that is about people and democracy, and not just about power."

The architects broke the building down into small, functional components: courtroom, administrative offices, judges' chambers, and library. This kept the structure at a human scale and had the more

practical purpose of allowing emerging contractors to hone their skills by handling different portions of the project. While it is obvious from the outside that the circular part of the building is the courtroom, the building as a whole doesn't dominate the site with one well-defined form.

Nor does it wall itself off. The perimeter is penetrable, although not quite to the extent that a visitor could just walk in anywhere. Recalling an African building tradition of creating outside rooms, timber awnings shade the spaces near the building's edge. A similar shading system is used on the interior to further dissolve the boundary between inside and out. For the same reason, most of the facades filter daylight through steel slats, which, at night, emit electric light, making the building a beacon for the surrounding area. A new street grid will overlay Constitution Hill, as the site is called, connecting it to adjoining neighborhoods, and for the first time, the city will claim the area as a setting for normalized urban life. Public spaces and sidewalks will accommodate informal markets.

The Apartheid Museum (above), with its memory boxes (left), will be built next to a collection of run-down, corrugated-iron shacks (bottom), a constant reminder of apartheid's legacy of poverty.

Only one of the prison buildings will be destroyed to make room for the court, while another will probably become the Nelson Mandela museum and bring tourists to the district. Others will be refitted to house associate agencies of the court, such as the Human Rights Commission. Some of the existing facilities will be preserved as objects of memory: across from the court, a prison wall will be stripped and covered with glass to permanently reveal the now empty cells.

Remembering injustice

Noero Wolff Architects' design for the Apartheid Museum, to be built in the Red Location neighborhood of Port Elizabeth, also rejects conventional building types. The Red Location is an industrial area, with factories on one side of the railroad tracks and corrugated-iron shacks housing workers on the other side, where the museum will be. Like most South Africans, the people who live here never patronized museums during apartheid because they weren't allowed to enter.

In contrast, a factory represents a more public place in most people's experience than a museum, says architect Heinrich Wolff. People met freely there, he explains, and the unions, one of the greatest forces against apartheid, held sway. It made sense, then, for the architects to adopt an industrial language for the building.

It had been surmised that some people in the community would prefer a different type of aesthetic to interrupt the industrial monotony. To address these concerns, the museum displays—which the architects are designing themselves—will allow much greater freedom of interpretation. Beneath the sawtooth roof, in a great open space, will sit 12 "memory boxes," each about 18 feet long and 30 feet high. A collection of a variety of artifacts from the apartheid experience will fill each one. Visitors will choose their own paths through the boxes and develop their own narratives.

Much like the new courthouse, the museum is meant to be an economic engine. Visitors will walk past updated versions of traditional market stalls and a crafts center before entering the museum. A conference center is also planned. Construction materials—concrete, brick, and corrugated iron—will be inexpensive.

Meanwhile, grassroots work in the townships and former homelands proceeds much as it did before 1994. C.S. Studio Architects, perhaps South Africa's most vocal proponents of including the community in every stage of the design process, has completed a meat market in the Cape Town township of Guguletu that provides formal cleaning and cooking facilities for 100 traders.

Principal architect Carin Smuts says the traders wanted their tables placed in a central open space with supporting facilities surrounding them—a design with which they and their customers are familiar, but which ran contrary to Smuts' Western training. She convinced the traders that a wavy, unconventional roof—though slightly more expensive—would be preferable and make the market stand out more in the community.

Local designers will be able to think bigger as the nation's resources become increasingly devoted to development—and inevitably, their influence will grow. Architect Muhammad Mayet, who has designed community buildings for impoverished communities throughout southern Africa, has come up with a plan to reconnect the northern and southern halves of Johannesburg, currently divided by railroad tracks.

In the same vein, architect Peter Rich designed a multipurpose, one-stop facility that will attract tourists to a small northwestern rural village. He says that the complex, which includes a gas station and restrooms, craft shops, a community hall, and campgrounds, represents a new typology that can be repeated by other poor villages.

This kind of economic opportunity wasn't possible before 1994—there weren't many tourists then. But the country is changing, and many architects see a chance to make a positive impact. Says Cape Town architect Smuts, "You couldn't have a better opportunity to build a better South Africa than by being an architect." ■

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CIRCLE 34 ON INQUIRY CARD

LOOKING TO REDEFINE ITS DESIGNS, GSA HIRES MORPHOSIS FOR TWO PROJECTS

After a generation of building lackluster projects, the U.S. General Services Administration (GSA) is attempting to redefine ideas of public architecture through its Design Excellence Program. The program, launched in 1993, is dedicated to commissioning the top American architectural talent to design new federal projects. To this end, the GSA has hired Los Angeles bad boy Thom Mayne, AIA, and his firm, Morphosis, to collaborate with local firms on two important new projects: a federal office building in San Francisco (in collaboration with SMP/SHG) and a federal courts building in Eugene, Ore. (in collaboration with the DLR Group).

The approximately 650,000-square-foot San Francisco project will be on a key site in a dilapidated area south of Market Street. The $120 million to $140 million project is due to open in 2001 or 2002. While no physical proposal exists yet, Mayne sees the project as an opportunity to question the office building as a type.

"There are any number of possibilities here for transforming the social and cultural aspect of the generic workplace," he says. "Really, most office buildings are deadly places." In addition, Mayne is looking forward to addressing the potentially conflicting issues of street frontage, federal security, and public accessibility that the downtown site poses.

The courthouse in Eugene raises other, perhaps more complex challenges. The 264,000-square-foot, $73 million project offers myriad possibilities for using architecture symbolically. While the site has not yet been secured, Morphosis and DLR have presented a design vision (two perspectives, below) that strives to use architectural form and space to symbolically represent the significance of a courthouse in American culture.

The team's aspirations for these projects, which will be infused with Morphosis' provocative thinking, extend beyond what the public typically expects of federal buildings, precisely the point of the Design Excellence Program. *Lisa Findley*

GEORGE LUCAS WINS A WIDE-RANGING COMPETITION TO BUILD IN SAN FRANCISCO'S PRESIDIO NATIONAL PARK

After an uncertain rebirth as a national park, San Francisco's Presidio is the scene of a series of initiatives that may offer a peek into the park system's free-market future.

In May, the Presidio Trust, the park's governing agency, selected a team headed by George Lucas as the winner of a competition to develop one of its choice parcels, the 23-acre site previously occupied by the Letterman Medical Center. The new Letterman Digital Center (below), a 900,000-square-foot campus for Lucas' Industrial Light & Magic and LucasArts enterprises designed by Gensler San Francisco, will feature a 7-acre "great lawn" and a 1,500-car underground garage. Lucas officials describe it as a "creative think tank." About 15 acres of the campus will be open to the public.

The Lucas proposal prevailed over other developer-architect teams including Skidmore, Owings & Merrill, Robert A.M. Stern, EDAW, and Calthorpe Associates, among others. While proposals ran the gamut from housing to a conference center to an Internet company headquarters, each called for demolishing the abandoned Vietnam War-era medical center.

After fierce political jockeying, the Lucas name and $250 million offer held sway. Though details are not confirmed, groundbreaking is projected for next year.

The 1,480-acre Presidio, one of the first U.S. military outposts on the West Coast, was decommissioned in 1994. In a deal intended to stave off Republican efforts to auction the land, Congress decreed that the Presidio Trust must be able to cover its projected $36 million operating budget by 2013 or face having its land sold.

After nearly a decade of planning, the Presidio Trust is now leasing the nearly 3 million square feet it needs to meet that goal. It hired Simon Martin-Vegue Winkelstein and Moris to undertake the implementation planning and is completing a plan by landscape architect George Hargreaves and Associates to restore Chrissy Field, a historic Army airfield.
Eric C.Y. Fang

PRESIDENTIAL POLSHEK

One of the year's plum commissions—the Clinton Presidential Library—has gone to the Polshek Partnership of New York City. The Clintons have been linked to names such as Frank Gehry, FAIA, and Charles Gwathmey, FAIA, but in the end Polshek was selected after meeting with the president at the White House earlier this year. The Clintons have not yet commented on their choice.

The $125 million library will be built in Clinton Presidential Park, planned on the banks of the Arkansas River in Little Rock. While no designs have been developed, it is known that a 100-year-old railroad depot will be incorporated in some way.

Polshek will collaborate with Ralph Appelbaum Associates; the same team designed the dramatic new Rose Center planetarium in New York City. ***Soren Larson***

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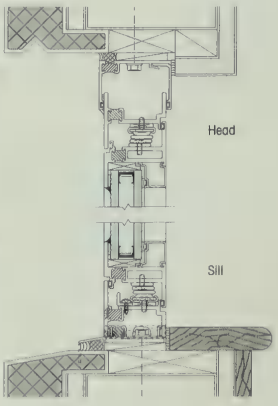

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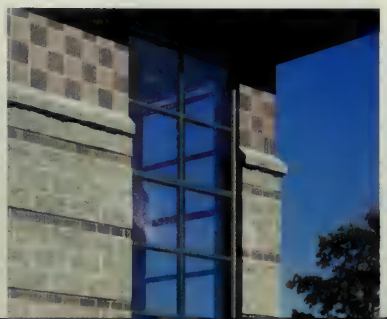

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CIRCLE 35 ON INQUIRY CARD

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SEATTLE CITY HALL AWARDED

Bohlin Cywinski Jackson Architects has won a competition to design the new $66 million Seattle City Hall, part of a $224 million civic campus the city is constructing. The 200,000-square-foot city hall will share its steep site with a new public plaza—the centerpiece of a master plan by Seattle firms Hewitt Architects and Weinstein Copeland Architects to revitalize and replace outmoded and unsafe municipal buildings.

Mayor Paul Schell, HON. AIA, a selection committee member who describes his current offices as a "recycled Holiday Inn," challenged the designers to "balance the competing needs of consensus and inspiration."

Surprisingly, only eight firms responded to an initial nationwide search. Concerned that architects may have had to choose between pursuing Seattle's new central library or the city hall, the deadline was extended until after the shortlist for the library was announced (the Office for Metropolitan Architecture of Rotterdam won the library commission in June, beating out Steven Holl Architects). The field expanded to 19, and the city decided to interview 3: Bohlin, with offices in Pennsylvania and Seattle; Antoine Predock Architect of Albuquerque; and Patkau Architects of Vancouver.

Peter Bohlin, FAIA, best known for his collaboration with Jim Cutler, FAIA, on Bill Gates' mansion, will work in a joint venture with Basetti Architects of Seattle. To be completed in 2002, the project will house the mayor's offices, city council chambers, and customer-service spaces, as well as a child-care center and facilities for bicycle commuters. ***Sheri Olson, AIA***

STATEN ISLAND, NEW YORK CITY'S FIFTH BOROUGH, HOSTS A SERIES OF REVITALIZING PROJECTS

Staten Island, often derided as the forgotten borough of New York City, has been getting a lot of design attention of late.

The locus is the Staten Island Ferry, which attracts almost 1 million tourists per year (and 8 million commuters). The intermodal St. George Station is being redesigned, and several large-scale civic projects are in the works directly adjacent. Mayor Giuliani, Staten Island Borough President Guy Molinari, the NYC Economic Development Corporation, and the Department of Transportation envision the $81 million renovation of St. George as the first step in revitalizing the waterfront. Hellmuth, Obata + Kassabaum (HOK), the project's planners and architects, have completed a complex project-definition phase. Completion is projected for 2002.

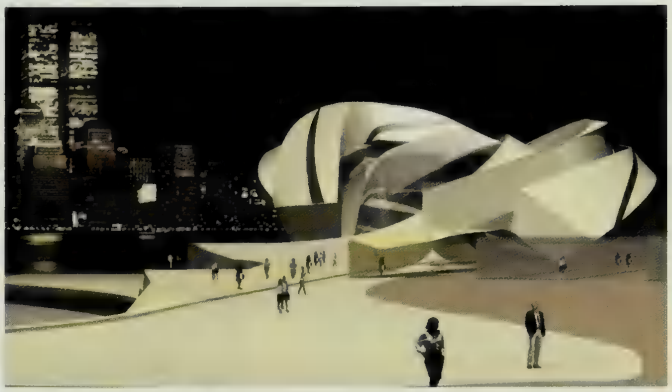
Ken Drucker, design director at HOK's New York office, says the building will be "light and airy, improving the experience of waiting and riding the ferry, while simultaneously creating a new gateway for Staten Island and its residents." Sandwiching the new station between other new attractions will create what Drucker refers to as "a necklace of cultural institutions along the waterfront."

A baseball stadium for a Yankees' minor-league team is planned just northwest of the terminal. Designed by HOK Sports Facilities Group, the ballpark is due to be completed in 2001 and will give fans a clear view of Manhattan's dramatic skyline. Norman Friedman, an associate at HOK Sports, says the goal "is to connect the city to the site, through a public sidewalk, arcade, and esplanade along the water."

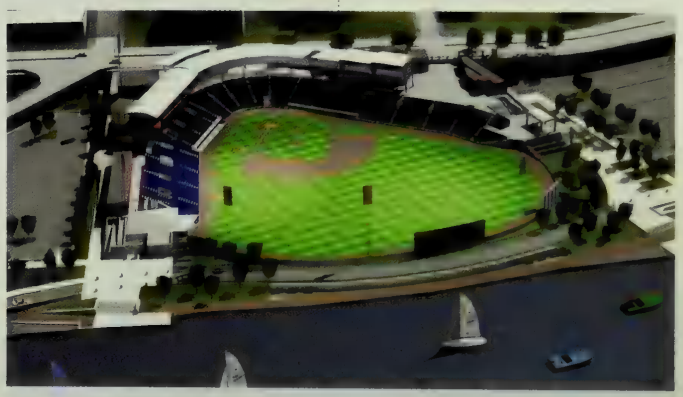
South of the ferry terminal, the National Lighthouse Center and Museum will be installed on a site that housed the main U.S. Lighthouse Service operations for over 100 years. The museum will inhabit seven historic structures that are undergoing rehabilitation by Jan Hird Pkorny. Henry Stephenson, the museum's project director, says the buildings "will become artifacts; they become the exhibits themselves."

What might prove the most talked-about attraction is Peter Eisenman, FAIA's Staten Island Institute of Arts and Sciences. The architect originally conceived a master plan for the ferry terminal with a museum on top of it, but is now designing the museum on a new site. Sitting between St. George Station and the stadium, the strikingly contemporary 150,000-square-foot project would devote at least 60,000 square feet to science and technology exhibits, though details aren't settled. If funding is in place, the museum could break ground this winter.

Susanna Sirefman



Peter Eisenman's proposal for the National Lighthouse Center and Museum.



HOK's designs for a revamped St. George ferry terminal (top) and a new minor-league baseball stadium on the waterfront.

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CIRCLE 36 ON INQUIRY CARD

MODERN HUNGARY: THE COPS MOVE OUT AND A CHAIN HOTEL MOVES IN

Once redesign and reconstruction is completed, a venerable building in the heart of Budapest will be a much more hospitable place to visit than it was under its former occupants. It certainly will be easier to check out of.

The 81-year-old structure served as the headquarters of the Budapest Police Department for 49 years before being vacated in late 1997. It will reemerge next spring as the $45 million, 220-room, luxury five-star Hotel Le Meridien Budapest. The French hospitality chain Meridien has some 120 hotels worldwide, but this will be its first in Central Europe.

The renovation has not been without problems, says architect Tibor Kolbe, managing director of Mérték Epítészet Studio, the Budapest firm that did the design work and is overseeing the reconstruction. Despite extensive bomb damage during World War II and two previous major renovations, "it seemed to be in good shape," he says. "But the beams had become very thin and the building had to be reinforced." And, because it is a historic building, the Monument Protection Authority requires that its original premodern exterior remain unchanged.

Completed in 1918 as the headquarters for the Adria Insurance Co., the structure was one of the first steel-reinforced buildings erected in Budapest. In addition to the insurance company's offices, it housed several floors of large luxury flats. It was turned over to the police by the then Soviet-controlled regime in 1948.

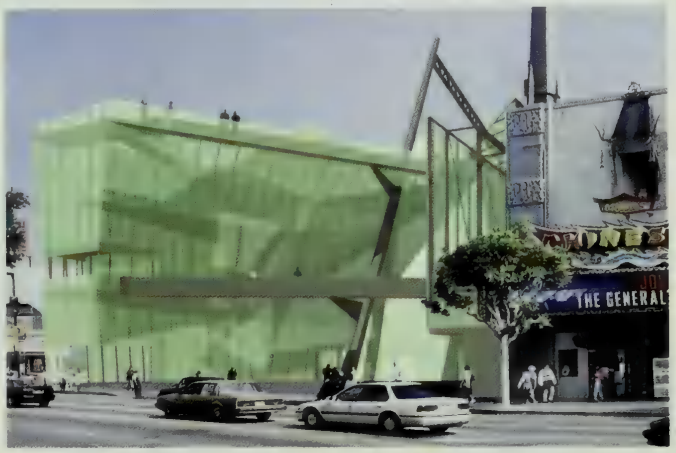
When construction is finished, the hotel will provide deep-pocketed tourists and business travelers with posh rooms and suites, a swimming pool, and a health club on the fifth floor, as well as an elegant bar/restaurant and a variety of shops on the ground floor. The cells and bomb shelter on the basement level will be replaced by banquet and meeting rooms. *Carl Kovac*

ROTO TO ENLIVEN HOLLYWOOD WITH A MODERN RETAIL CENTER

Hollywood Boulevard is known for Mann's Chinese Theater, celebrity handprints in the concrete, and tourist outlets—not for contemporary architecture. But that will change soon when a parking lot at the Orange Street intersection is transformed into HollywoodOrange, a 30,000-square-foot retail center with a modern glass-oriented design by RoTo Architects, in association with John Ash Group.

The building—which will create a striking juxtaposition with next-door neighbor Mann's—will have nearly 8,000 square feet of public space on the ground level as well as a 10,000-square-foot partially enclosed roof terrace for public use and special events. Groundbreaking is scheduled for early January with construction due to be completed about a year later.

HollywoodOrange is the latest effort to elevate the gone-to-seed Hollywood area. The subway has been extended; the American Cinematheque, a nonprofit film forum, has opened new headquarters at the historic Egyptian Theater; and a new Academy Awards theater will open in 2001. *Soren Larson*



GEHRY GETS GO-AHEAD AT BARD, MAKES A TRIP TO PANAMA

Bard College in Annandale-on-Hudson, N.Y., finally broke ground last month on its new Frank Gehry-designed performing arts center, after moving the site to appease concerned locals. The small, liberal arts school wanted to build a dramatic home for its music, drama, and dance programs and hired Gehry to recreate the magic he worked with the Bilbao Guggenheim. The architect produced a design for the $24 million center that featured his trademark silvery, swooping forms—but area residents claimed it didn't fit into the surroundings and would block pastoral views. Eventually, the university found an acceptable spot on the north end of campus, and will likely open its new structure in late 2001.

Meanwhile, on a much larger scale, Gehry has been leading a team of architects, engineers, and environmentalists to develop a master plan for sites at either end of the Panama Canal. Under the direction of Panama's president, Ernesto Perez Balladares (this year, the canal zone is reverting from international control to Panamanian control), Gehry is charged with preserving and revitalizing both architecture and the surrounding landscape. The master plan will include Fort Sherman and 20,000 acres of virgin rain forest at the Caribbean mouth of the canal.

While it may seem an exotic locale, for Gehry the culture is not unknown—his wife, Berta, is Panamanian. *S.L.*

THE HOME OF THE ORGASMATRON GETS SOME MUCH NEEDED CARE

High atop Genesee Mountain, 25 miles west of Denver, architect Charles Deaton constructed what he called a "sculptured house" in 1965 made of steel and hand-troweled concrete and resembling a white clamshell delicately perched on a pedestal. Featured in Woody Allen's 1973 sci-fi/comedy *Sleeper*, the 2,500-square-foot house is one of Colorado's most recognizable buildings. But it was never completed or occupied, and since last year, when vandals broke a number of windows, causing an estimated $50,000 in damages, its future has been uncertain.

Recently, however, Denver businessman John Huggins bought the house for $1.325 million, and he's restoring it to its full futuristic glory. Huggins hired Denver architect Nicholas Antonopoulos, of Praxis Design, to complete the interior and oversee construction of a 5,000-square-foot addition based on Deaton's original design. Huggins also intends to renovate a small inoperative elevator reputed to be the inspiration for the movie's "orgasmatron," a sort of virtual sex machine.

Deaton, a self-taught commercial architect and industrial designer whose largest project was the two-stadium Harry S. Truman Sports Complex in Kansas City, Mo., died in 1996 at age 75. In a 1965 article in *Art in America*, "The Sculptured House," Deaton called his mountain aerie "an act of freedom. I am out of the box, off the streeted grid."

Before Deaton died, Antonopoulos—who is married to one of Deaton's daughters—began working on plans to complete the house. But Deaton ended up selling it to California real estate developer Larry Polhill, who owned the house for eight years before selling it to Huggins. Now Antonopoulos' work can continue.

Stunning views

"It really is a sculpture," says Huggins, who plans to use the house for weekend getaways, parties, and political fund-raisers. "From the balcony, you can see the Continental Divide to the west and Denver International Airport to the east. But my favorite room is the midsection of the pedestal. When you stand in the middle and look out the windows, you have a feeling that you're floating over the mountains."

For the interior, Deaton envisioned curved couches and "beds shaped like overgrown watermelon seeds." Huggins says a prototype bed was actually built for the house, but only a deteriorated piece of plywood remains. "We're definitely going to have to build a lot of furniture specifically for the house. There's hardly a straight line in the place." *David Hi*

SASAKI CREATES AN ENTIRE CAMPUS FOR A GROWING DESERT COMMUNITY

In 1986, Sasaki Associates created a master plan for Chandler Gilbert Community College, a new institution in Chandler, Ariz. The campus was intended as a landmark for an emerging community—and now the landmark is expanding dramatically, mirroring the growth Chandler itself has experienced.

Sasaki is now instituting phase two: an expansion and master plan update that includes a new library (right) and more classroom and laboratory buildings. As with their predecessors, the designs emphasize solar orientation, easy pedestrian movement, and the integration of outdoor spaces. The master plan treats the site as an enclave, defined at the edges by plantings of cypress trees and oleander hedges.

The architectural aesthetic—described by Sasaki principal N. Scott Smith, AIA, as "functional modernism"—is inspired by its desert surroundings. "A lot of work [in the Southwest] isn't cognizant of the desert," he says. "We wanted this to truly be a part of the community." *S.L.*

SAN JOSE BUILDING AN UNUSUAL, MULTIUSE LIBRARY

Gunnar Birkerts Architects and Carrier Johnson are jointly designing a new city and university library in San Jose, Calif., that is being touted as the first large-scale combined academic and municipal library in the U.S. The $100 million, 465,000-square-foot building will house 3 million books and combine the operations of the San Jose State library and the main branch of the city's public library. Construction begins next year. ***S.L.***

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CIRCLE 37 ON INQUIRY CARD

LORD FOSTER FORGES ON WITH A NEW TOWER AND STADIUM

It continues to be a good year for Lord Norman Foster, HON. FAIA, who is poised to have more impact on the look of London than any architect this century. Having won the competitions for the London Assembly headquarters, a bridge across the Thames, and the renovation of the British Museum, he has now unveiled plans for a huge, innovative office building (right) and a world-class sports stadium (above).

Foster insists that the design for the 40-story, 450,000-square-foot headquarters for Swiss Re in the City of London—already dubbed "the gherkin" because of its long, tapered form—was approached "with no preconceptions except the aim of creating an environmentally responsible building, with a natural economy of form and a detailed understanding of the urban context in which it is placed."

The rotation of the floor plates means that a void at the edge becomes in section a spiraling atrium, interrupted every six floors with gardens that provide social space and create a healthy microclimate (and act as fire breaks). Pressure differentials around the exterior surface help draw natural ventilation through horizontal slots in the cladding, reducing greatly the amount of mechanical ventilation needed. The glazing wraps around a diagonally braced structure.

The form allows the 590-foot-high building to appear less bulky than would a rectangle of similar floor area. It also reduces reflection and encourages wind to flow around the face and not deflect to the ground level, which has been carefully designed to function as a public space.

The base contains two levels of retail space in a double-height arcade. At the northeast corner of the site will be an another six-story building that will house a cafe and bar, a management office, and the physical plant. Interestingly, the site was the scene of a devastating IRA bomb attack in 1992 and later was the proposed location for Foster's controversial 1,260-foot-tall "millennium tower," which would have been the tallest building in London. The plan was eventually abandoned.

Foster and Partners' second prominent project is the new English National Stadium, which replaces Wembley Stadium, built in the 1920s and long the premier venue for sports in England, but no longer adequate. The proposal for the $780 million project from Foster along with HOK+LOBB Sports Architecture was chosen through competitive interview.

Boldly, the design dispenses with the existing stadium's iconic twin towers, replacing them with four 425-foot masts. The stadium will have 90,000 seats, a retractable roof that will allow sunlight to reach the entire playing area, a 2,000-seat glazed banquet hall, offices, and a luxury hotel. It will be ready by spring 2003 and should be a major component of England's bid to host the 2006 World Cup. *Steven Spier*

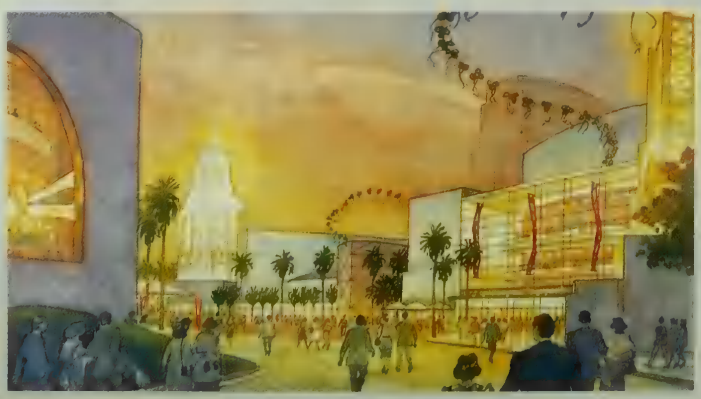
CESAR PELLI MAKING ANOTHER MARK IN ORANGE COUNTY

Cesar Pelli, FAIA, is creating schematic designs for a $200 million expansion of the Orange County Performing Arts Center in Costa Mesa, Calif. He says design decisions will be made public in about five months. So far, plans call for the center to add a 1,800-seat concert hall, a 500-seat music hall, and an outdoor plaza for gatherings and performances.

The acoustics of the concert hall are the utmost priority and will be "comparable to the best two or three concert halls in the world," claims Pelli, principal of Cesar Pelli & Associates in New Haven, Conn. The acoustician for the new center is Russell Johnson, owner of Artec Consultants in New York City.

Officials at the center say they chose Pelli for his expertise in concert hall design and for his familiarity with this southern California community. A decade ago, Pelli designed the Plaza Tower, a stainless-steel-clad office building regarded as a local landmark and adjacent to the performing arts center's site.

A couple of years after opening in 1986, the performing arts center outgrew its 3,000-seat Segerstrom Hall and 300-seat black box theater, designed by Caudill Rowlett Scott. The Segerstrom family, local philanthropists, had donated five acres for the original center and later earmarked six more for the expansion.



Pelli notes that the new center is being built without government funding, unlike all the other performing arts centers he has designed. Funding for both the old and new Orange County buildings is from private donors. The project is expected to be completed in about five years. ***Susan R. Bleznick***

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CIRCLE 38 ON INQUIRY CARD

CUNINGHAM CROSSES CULTURES TO BUILD A SCHOOL IN FINLAND

A new American-designed elementary school is making a positive impact in Heinavaara, Finland. Designed by Minneapolis-based Cuningham Group, Heinavaara Elementary's interior embodies a new kind of learning environment: there are no double-loaded corridors or closed-in classrooms here. Instead, the design goal was to provide flexible learning spaces of varying sizes. Meanwhile, the traditional red metal roof and wooden exterior reflect the local vernacular.

After hearing Bruce Jilk, AIA, educational facilities specialist for Cuningham, speak in Helsinski about new ways to design schools, impressed Finns from Heinavaara decided to build a school for their children embodying the latest architectural theories.

They also wanted to learn to build an all-wood schoolhouse using American platform-framing construction, which is faster and more economical than the Finns' balloon framing, in which single, vertical timbers are erected for all floors at once. In the American method, one story is constructed first, then used as a platform for each successive floor.

Following several meetings with the clients, Jilk and project manager Judy Hoskins worked out a design solution. The result is a charming, almost old-fashioned-looking small schoolhouse, with an interior layout that is radically different but still warm and inviting. To admit more daylight, windows reach down almost to floor level. When children enter on cold dark mornings, they will be greeted with the fragrance of homemade pies baking in a traditional Karelian oven installed in the gathering room's fireplace. This space will also accommodate a media center, and music and art areas and will serve the whole community after hours.

The school houses just 160 students and at 26,000 square feet is the smallest ever designed by Cuningham. According to Hoskins, the Finns "shared our goals of working out the best learning environments for their children. This was a rare gem of a commission."
Bette Hammel

STUDENTS STORM MIAMI BEACH FOR EDAW'S SUMMER PROGRAM

Most design firms call their intern programs "hands on." At EDAW, a landscape architecture and urban planning firm, interns take this to the extreme. The summer student program organized by the San Francisco-based company begins with a two-week, real-life project—complete with client meetings, public workshops, site investigations, and intensive, interdisciplinary design sessions. The program culminates in the students' formally presenting their work to the client—after a crash course in public speaking, courtesy of EDAW Chief Executive Officer Joe Brown.

A beach town's issues

Miami Beach City Manager Janet Gavarrete agreed to host this year's program. The city was seeking ideas for the area around Indian Creek, which has long played second fiddle to the community's famous (and mostly private) beaches. Area residents—especially those living along "Condo Canyon" who couldn't find safe and pleasant public places for walking—had convinced city leaders that a valuable resource is being wasted.

With guidance from EDAW professionals from the firm's San Francisco, Orlando, London, Atlanta, and Seattle offices, 15 undergraduate and graduate students from around the world teamed up in Miami Beach in May. During the first week, they studied the site and met with local officials and experts, such as Randall Atlas, AIA, who helped explore design strategies that can help limit criminal activity, and architect Daniel Williams, FAIA, an expert on sustainable development for communities in the Everglades watershed. Morris Lapidus, the 97-year-old architect whose Fontainebleau Hotel helped set the tone of this tourist mecca, added eminence in the second week.

Student solutions

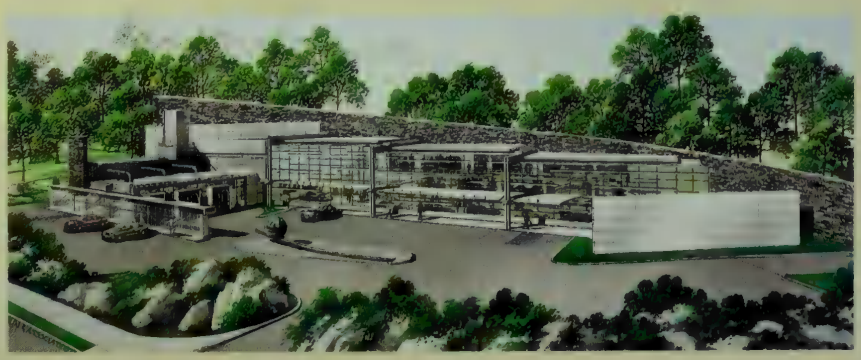
The students came up with six projects, including the Brittany Bay Ecology Zone, a strategy designed to make room for pedestrians, and the Indian Creek Greenway, a lush strip along the eastern bank of the creek. They emphasized the importance of links between the creek and the beach, a distance of only a few blocks in some areas.

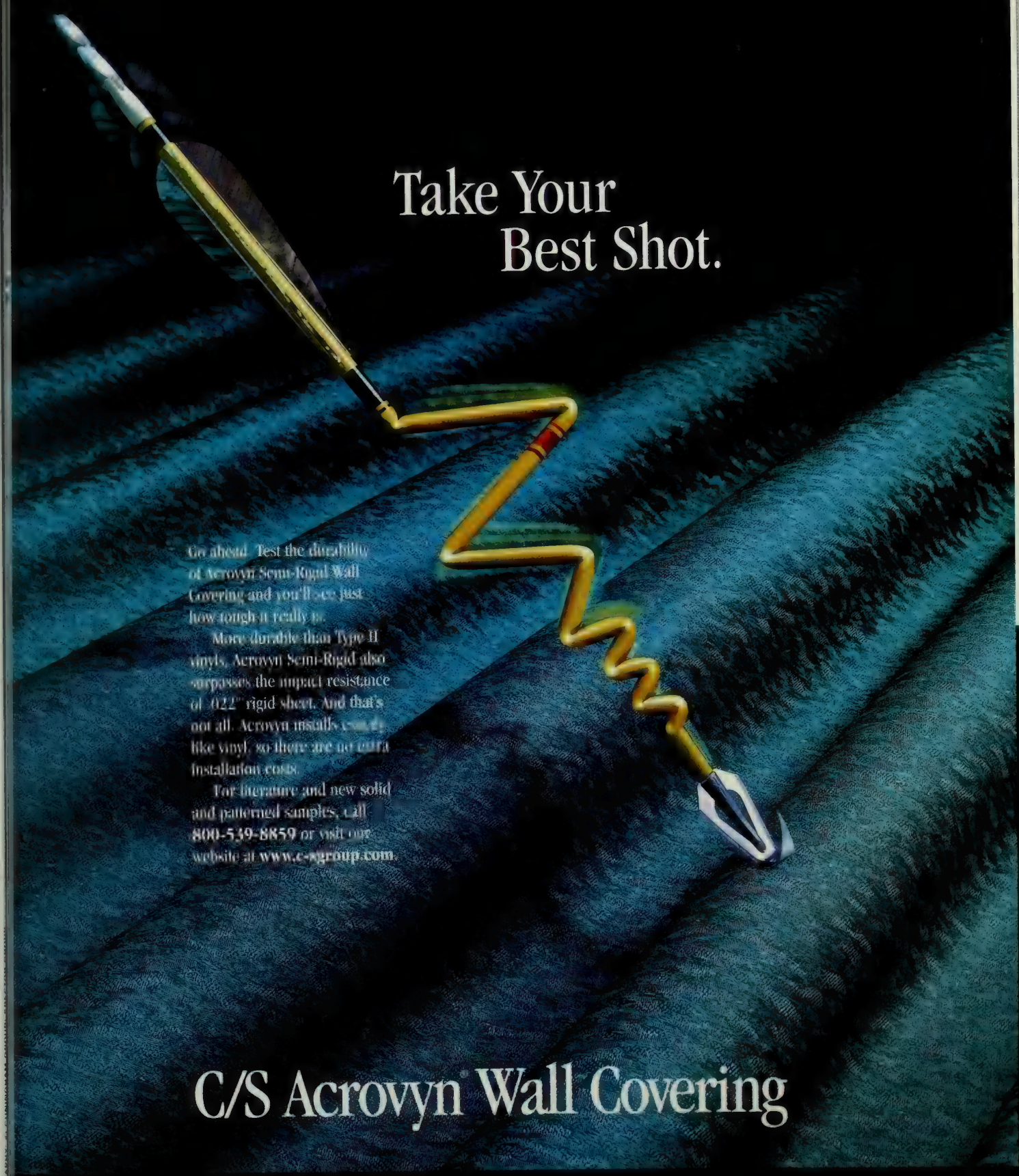
Todd Hill, senior associate and director of EDAW's Orlando office, has been involved with five of the summer student programs since he participated in one as a student in 1985. "We don't do the design. We work with them to clarify their vision," he says, adding that students aren't burdened with the traditional client restraints.

"Because they are not on the clock, pressure to stick to the client's preconception of what's possible isn't there," Hill notes. "Thus, the City of Miami Beach gains a whole range of ideas that might not have been explored in a traditional project setting." *Kira L. Gould*

BMW USES DESIGN TO BOOST CAR SALES

For a new BMW dealership in Greenwich, Conn., Spector Group, headquartered in North Hills, N.Y., has transcended typical car-lot dreariness. Most of the services are below grade, while the upper portion appears to emerge organically from the landscape. A 475-foot-long wall, quarried from local granite, travels the length of the structure, which is divided into sleek spaces enclosed by glass. Marc [redacted] Spector, AIA, says the design "allows architecture, in conjunction with the product, to draw people to the sight." *Soren Larson*





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CIRCLE 39 ON INQUIRY CARD

NEWS BRIEFS

Return to Sydney Danish architect Joern Utzon, who designed the Sydney Opera House but quit before it was completed, has been given a chance to finish the job: Utzon is consulting on the building's new revamping project, which includes an update of its interiors (the concert hall has long been criticized for poor acoustics). Utzon, 82, has never seen the opera house; he quit the project in 1966, seven years before it was finished, after scandals about costs and arguments about design. He will work with Australian architecture firm Denton Corker Marshall, which is overseeing the project.

Piano plays Dallas Renzo Piano has been selected to design the Nasher Sculpture Center, which will encompass an outdoor sculpture garden and indoor gallery on a site adjacent to the Dallas Museum of Art and the Meyerson Symphony Hall. Completion of the project, which will house the Nasher Foundation collection, is expected in 2001.

Demolition of a Madrilenian icon, Miguel Fisac's 1965 Jorba Laboratory, begins.

A team for Tunisia The U.S. State Department has selected Tai Soo Kim Partners of Hartford to design a new embassy complex in Tunis. The commission includes a master plan for a 22-acre site and the design of an 80,000-square-foot embassy and two accompanying townhouses. The architects of the $42 million project will address the government's desire for tighter security after recent bombings of other U.S. embassies in Africa.

On the border In another government commission, the General Services Administration has chosen a team comprising Los Angeles-based Siegel Diamond Architecture and Calgary-based Culham Pedersen Valentine to design the U.S./Canada Port of Entry at Sweetgrass, Mont., and Coutts, Alberta. The spot will host the busiest border-crossing station between the Pacific Ocean and the Great Lakes. Construction is estimated at $20 million and occupancy is expected in 2003.

Locals chosen in Singapore A little-known local practice, Swan & Maclaren Architects, has topped a list of established international architects, including Michael Graves, FAIA, and Moshe Safdie, FAIA, winning the competition to design the National Library of Singapore. Swan & Maclaren won the contract in association with T R Hamzah & Yeang, whose Ken Yeang is a senior partner at Swan & Maclaren.

Madness in Madrid An icon of Spanish modern architecture was demolished in July in Madrid. Miguel Fisac's 1965 Jorba Laboratory, a futuristic-looking pagodalike tower of six floors rotated 45 degrees over one another, stood on a prominent site beside a main highway outside the city. Fisac used innovative techniques—of his own invention—in reinforced concrete to project the

daring cantilevered corners of each floor. Like many modern landmarks, the structure was not on Madrid's list of protected buildings, and it did not meet fire-safety standards, lacking a second means of egress, for example. When new owners applied to the city for a demolition permit, it was accepted with scant review. Only when demolition began was there outcry from the architectural community, but it was too late. Juan Navarro compared the demolition to the burning of a painting, and Javier Carvajal called it a disgrace. The College of Architects, the local professional organization, announced it will now review modern buildings for inclusion in the landmarks register.

The big, expensive Apple The cost of residential construction in New York City is the highest in the country, and corruption, outdated and burdensome regulations, and excessive labor and material costs contribute to the expense, according to a study commissioned by the city. The study recommends that all construction managers be investigated and licensed to weed out those connected to organized crime.

Arkansas update The University of Arkansas (UA) has unveiled conceptual plans for Razorback Stadium that should prove more popular with the UA board of trustees than the prior plan designed by New York architect Peter Eisenman, FAIA. The trustees rejected Eisenman's plan, presented last September, after describing it as "futuristic" and "exotic." Trustees have seen the new proposal—by Steve Cash of Heery International in Atlanta—and like its more traditional look.

New faces George Ranalli, a former professor at Yale, has become dean of the school of architecture at the City College of New York. Across town, Catherine Ingraham has been named chair of the graduate architecture and urban design program at Pratt Institute. Meanwhile, James Wines is the new head of the department of architecture at Penn State's school of architecture and landscape architecture.

Omaha looks up Leo A. Daly, FAIA, has completed the master plan for a nine-block campus in downtown Omaha for the First National Bank of Omaha. The centerpiece is a 40-story, 950,000-square-foot commercial tower (above) that will dominate the city's skyline when it opens in 2002. Curving glass flanks the tapering form, which is clad in pale buff granite.

Ando in England Japanese architect Tadao Ando is designing his first building in the U.K., in the northwestern city of Manchester, as a member of a team charged with redeveloping the city's Piccadilly Gardens. His contribution will be a long, low pavilion with a curving wall. ■

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The Green Architect will also present a closer look at newly built structures, as well as those on the boards, that are designed specifically to respect and even enhance the environment. The section will also highlight green products, chosen by our editors

for their contribution to green design. Selections are based on criteria ranging from durability to recycled content to emissions.

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THIS MONTH'S TEST:

WHAT IN THE WORLD?

Marking a fundamental change in this ancient culture's building practices, the mysterious structure depicted above was designed to be used inside as well as out. What is it? Who designed it? Where is it located? When was it completed?

Test your knowledge of exotic structures and architectural history in our newest "What in the World?" quiz. E-mail us your guess. One winner each month will receive a free one-year subscription to RECORD.

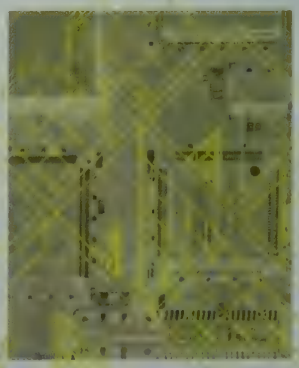
NEW ONLINE: THE DIGITAL ARCHITECT

When it's time to purchase new hardware or software, where do you go for guidance? RECORD's print coverage of computer software and hardware issues presents the information architects need to know to make purchasing decisions. That same direct, pertinent coverage now comes to the Web at www.archrecord.com.

A combination of original, Web-only content and information gleaned from the pages of the magazine, Digital Architect includes current and past Digital Architect magazine columns.

This is rounded out with a new section of product reviews. Written by Jerry Laiserin, AIA, a computer consultant and contributing editor to RECORD who specializes in information technology issues, these reviews focus on some of the newest project Web site software. You'll want to check this page frequently as it grows and new companies and products are added to our list!

If you missed it in the magazine, you'll find full coverage of our recent "Listening to Computer Experts" roundtable [August, page 74] on Digital Architect, including Web-only segments that reveal some of the most current thinking on computer issues as they relate to time management and handling high volumes of E-mail, the future of project Web sites, the integrity of CAD designs, and hardware and software purchasing.



DATESEVENTS

Calendar

La Casa Prossima Futura—The Home of the Near Future
New York City
September 15
An exhibit featuring futuristic products and concepts and the role that electronics will play in personalizing these environments. This display will be open to the public on the ninth floor of Saks Fifth Avenue. 914/697-9711.

Architecture and Revolution: Escuelas Nacionales de Arte en La Habana
Vienna
Through September 19
This exhibition comprises original drawings of the Escuelas Nacionales de Arte, Cuba's forgotten national arts schools, and photographs documenting the structures when first completed as well as their present-day state. MAK Works on Paper Room. 1/711 36-233.

Prague Architecture Throughout the Centuries
New York City
September 15-December 5
This exhibition focuses on Prague's architectural development over the last 600 years—from the Romanesque and Gothic expressions of the medieval era, the Renaissance and Baroque influences of the modern era, the "national revival" of the mid-19th century, to, finally, the postwar independent form of Modernism. National Academy of Design. 212/369-4880.

Design on the Edge Merchant Prince and Master Builder: Kaufmann and Wright
Pittsburgh
Through October 3
An exhibition exploring the belief shared by Frank Lloyd Wright and his client Edgar Kaufmann—for whom Wright designed Fallingwater in 1936—that good design has the power to change the lives of human beings. Heinz Architectural Center, Carnegie Museum of Art. 412/622-3131.

Breaking Through: The Creative Engineer
Miami, Fla.
October 1-December 31
An examination, through a series of eight case studies, of the role and process of creativity in the field of engineering. Miami Museum of Science and Space Transit Planetarium. 305/854-4247.

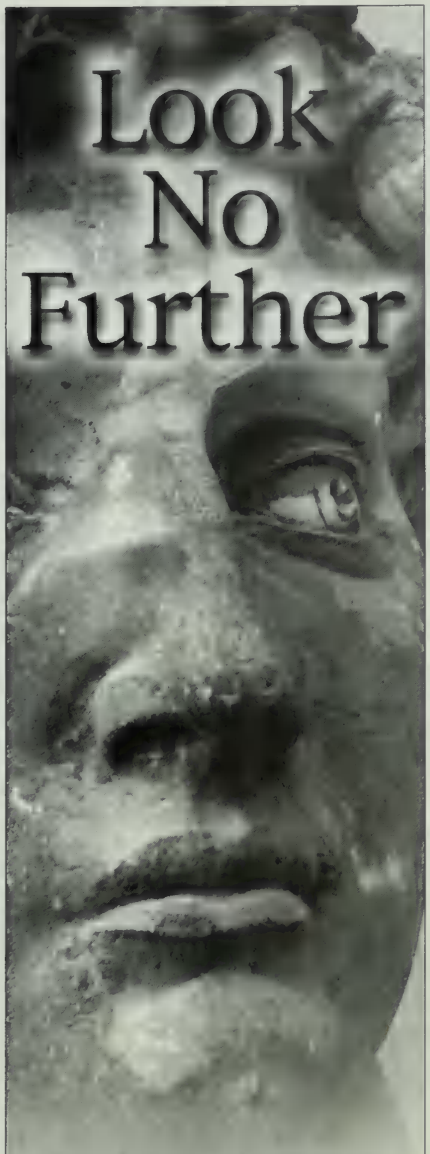
Preserving the 20th Century Building Envelope
Cambridge, Mass.
October 3-4
This conference will explore practical, cost-effective strategies for the care and preservation of 20th-century buildings that will extend their useful life into the next century. 617/623-4488.

56th Annual Sheet Metal and Air Conditioning Contractors' Convention
Palm Desert, Calif.
October 10-14
A wide variety of educational, motivational and self-developmental sessions presented by industry experts who provide technical and business management solutions to contractors' problems. Scheduled forums include Custom Fabricating and Manufacturer, HVAC Contractors, Industrial Contractors, National Residential Contractors and Service Contractors. Marriott's Desert Springs Resort and Spa. 703/995-4035.

METALCON International '99
Chicago
October 12-14
Annual conference and exhibition focusing on the use of metal in design and construction, bringing together metal-construction professionals, architects, engineers, builders, developers, and contractors from more than 40 different countries. Rosemont Convention Center. 617/965-0055.

Design-Build: Reaching for the Leading Edge
Dallas
October 13-15
The three-day event will feature 85 speakers and panelists and a showcase of products and services that support the design-build industry, with special emphasis on civil infrastructure projects. The 1999 conference is cosponsored by the National Society of Professional Engineers. Adams Mark Hotel. 202/682-0110.

Modern Times
Glendale, Calif.
October 16-17
A wide range of work from the twenties to the seventies by American and European industrial and interior designers will be displayed at the 13th annual fall Modern Times 20th Century Design Show & Sale. Glendale Civic Auditorium. 310/455-2894.



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CIRCLE 40 ON INQUIRY CARD

The Lamps of Tiffany: Highlights from the Egon and Hildegard Neustadt Collection
Wilmington, Del.
October 8-January 2, 2000
More than 45 examples provide an overview of the achievements in glass by the Corona, N.Y., workshops of the Tiffany Glass and Decorating Co. The selection profiles the inventive approach to lamp design by Louis Comfort Tiffany. Delaware Art Museum. 302/571-9590.

Celebration of Design: World Class '99
Dallas
October 27-29
Decorative Center Dallas is holding its second annual Celebration of Design. Three days of activities include showroom seminars, keynote speakers, panel discussions and the presentation of the first annual Design Achievement Award. Decorative Center Dallas. 214/698-1350.

1999 Remodelers Show
Philadelphia
November 5-7
Industry experts in remodeling, custom building, and senior housing will participate in educational programs and demonstrations at the National Association of Home Builders joint remodelers, custom builders, and seniors housing show. Philadelphia Convention Center. 202/822-8861.

Restoration & Renovation Expo & Conference
Charleston, S.C.
November 7-9
A tradeshow and conference dedicated to architectural rehabilitation, cultural landscape preservation, collections care, and historically inspired new construction. Westin Francis Marion Hotel. 978/664-6455 x0.

The Sense of the City: Louis Kahn's Design for an Office Building in Kansas City, 1966-1973
Manhattan, Kans.
Through November 28
An exhibition featuring Louis Kahn's drawings and models centered around institutional and public architecture, as well as his design for the unbuilt Kansas City Office Building. Beach Museum of Art. 785/532-7718.

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CIRCLE 41 ON INQUIRY CARD

Competitions

1999 Design Awards Program
New York City
Submission deadline: September 8
The American Institute of Architects New York Chapter announces the 1999 Design Awards Program eligible to AIA New York chapter members or registered architects practicing in New York City. The categories are Built Work, Interiors, and Projects. For more information, call the AIA, New York Chapter. 212/683-0023.

Graphisoft Prize '99 Competition
Submission date: September 10.
Graphisoft—developers of the integrated architectural CAD program—is holding this year's Graphisoft Prize competition based on a collection of diverse and inspired themes. Each year, the collection of themes is drawn from literature, film, poetry, mythology, music, and fine art. Architecture students and professional architects are invited to interpret buildings that exist only in the imagination. Competitors must register to participate at www.gsprize.com.

tkts2k
Submission deadline: October 4
New York City Mayor Rudolph W. Giuliani has announced tkts2k, an international competition among professional architects and designers to redesign the tkts booth in Times Square for the new millennium. The winner will be announced in December. To register and receive a competition packet, contact the Van Alen Institute at 212/924-7000, x18.

The Dryvit International Design Competition
Submission deadline: December 1
Dryvit Systems, Inc., a manufacturer of exterior insulation and finish systems, is seeking entries in the annual Dryvit International Design Competition. A $5,000 first prize will be awarded to the architect whose work best reflects the design freedom Dryvit provides in the building process. The winning design will also be featured in a two-page spread that will appear in the February 2001 issue of ARCHITECTURAL RECORD. For more information, call 1/800/4DRYVIT. ■

Please submit information for events and competitions at least six weeks prior to the magazine's publication date (September 15 for the November issue).

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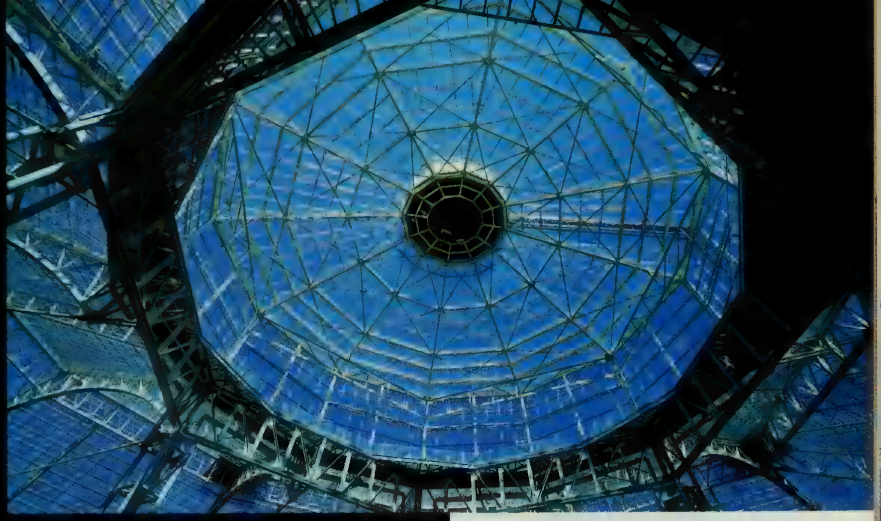

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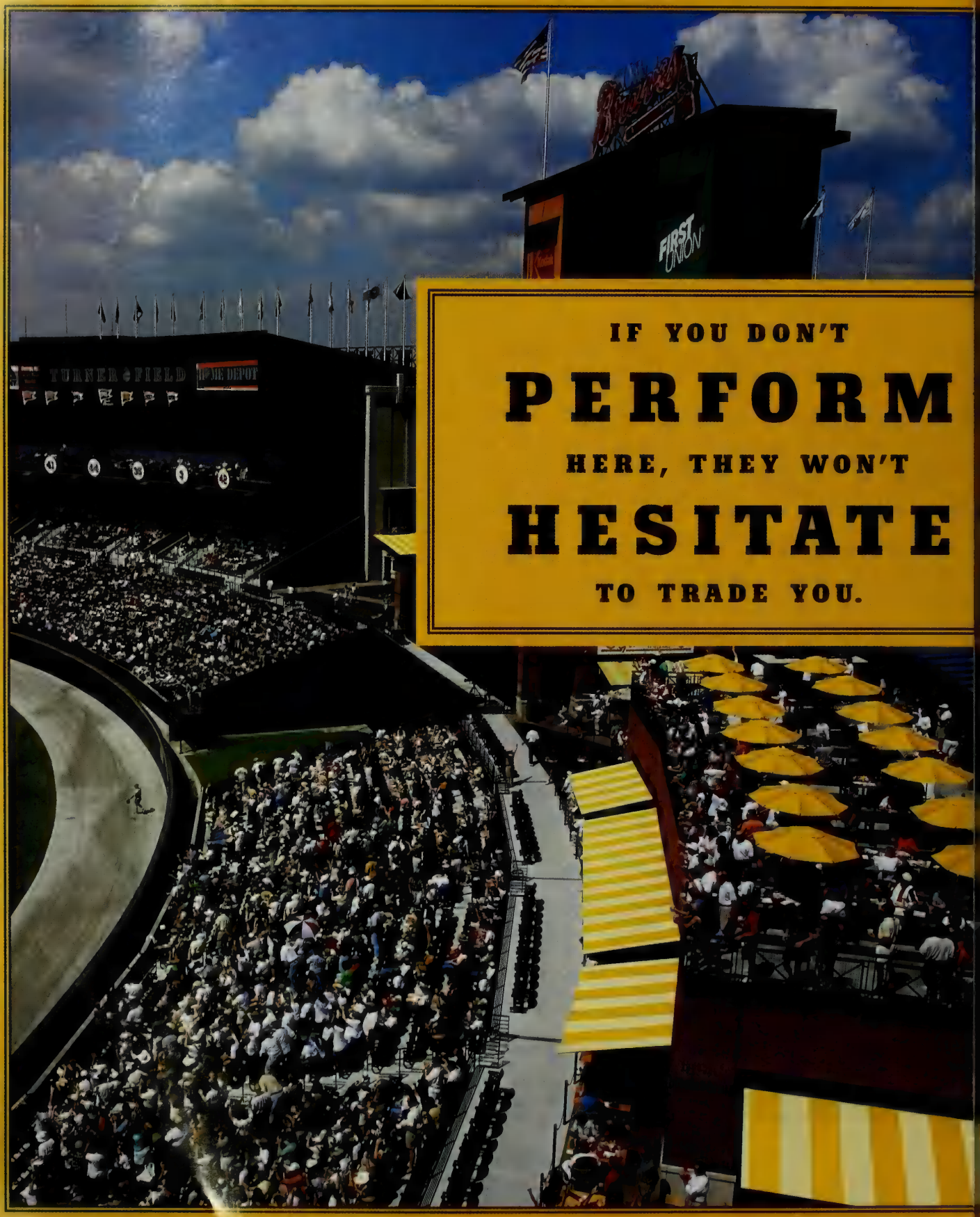

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CIRCLE 45 ON INQUIRY CARD

A bright idea for the XXIst century International Architecture Competition

Segreteria Organizzativa: l'Arca Edizioni
via Valcava,6 - 20155 Milano - Italia
tel.++39 02325246 - fax ++39 02325481
e-mail:arca@tin.it. - http://www.arcadata.it

Promosso da:

Comune di Milano

Organizzato da:

AEM SPA

l'ARCA

PARTNERS IN BUSINESS COMMUNICATIONS

International architecture competition
MILANO 2001, III MILLENNIUM
A bright idea for the XXIst century

Promoted by Milan Town Council

organised by AEM, l'ARCA
and Partners In Business Communications

sponsored by Milan Polytechnic

The Milan City Council has specially requested AEM SPA to commision l'ARCA, international architecture magazine, and Partners In Business Communications to launch an ideas competition open to all Italian and foreign architects and engineers registered with their respective professional associations, in conjunction, if so desired, with other artists or non-artists, to design a

"LUMINOUS SIGN"

for architectural communication purposes to be constructed in one of the city's public spaces as Milan's own homage to the beginning of the third millennium, testifying to the scientific-artistic capacities of the society in which we live.
A homage to the material and immaterial cultural heritage of all the ethnic groups populating the city.
The public area the City of Milan has designated for the project is just in front of Milan's central station (Piazza Duca D'Aosta).
The idea is to get the world's leading designers to put forward artistic-environmental ideas of such high creative standards that the city will be intellectually projected onto the highest of international levels, thereby attracting international attention to Milan's vocation as a European city projected towards the future.

COMPETITION RULES

ART.1
Competition object
The competition is for a preliminary design of a construction (for the area designated by the City of Milan) of great communicative-symbolic force sending out messages connected with the great achievements of human civilisation at the end of this millennium. A symbol designed to bear witness to Milan's desire to be part of the process of progress and evolution as it heads towards the future. No ordinary monument but an urban landmark provoking thought and feelings, particularly at night.
The only thing not allowed is the knocking down of nearby real estate, also bearing in mind certain road constraints. The project may be designed over two levels, a ground floor and basement, and must be completed in twelve months at a cost of no more than 1,000,000 EUROs.

ART.2
Entering the competition
The competition may be entered by sending in a written application , in either Italian or English, by mail or fax to: l'ARCA EDIZIONI - the Competition Secretariat of Milano 2001, III Millennium - Via Valcava, 6 I-20155 Milan, tel. ++39 02.325246, fax ++39 02.325481; arca@tin.it by and no later than 30th October 1999, in the form of either a bank order or money order made payable to the "Segreteria Concorso Milano 2001" at the Cassa di Risparmio di Parma e Piacenza, agenzia 11, Milan, account no. 43178315, CIN P, ABI 6230, CAB 01682, for Lit.200,000 (100 EUROs, 120 US$) indicating your: name, surname, address, nationality, telephone and fax numbers. Teams of designers need only send in the particulars of their designated leader.
Team leaders are entitled to make inquiries at the Competition Secretariat until 10th December. The most interesting answers will be published on the Internet site.

ART.3
Taking part in the competition
The competition is open to all architects and engineers registered with their respective professional associations or with valid qualifications in their country of origin.
In the case of teams, a leader must be appointed and signed approval by all members enclosed with the competition documents. The team leader will, in all respects, be accountable to the competition organisers
Team members, excluding the leader, may be either artists or designers without actually being qualified architects or engineers, but they must specify the qualifications entitling them to take part in the competition.

ART.4
Competition materials enclosed
The Competition Secretariat will send all the graphics material and CD containing the CAD plans of Piazza Duca D'Aosta and photographs to all those who enter within the set deadlines and pay the fee specified in article 2.

ART.5
Competition bars
The competition is not open to:
members of the jury;
spouses, relatives, and close acquaintances of the jury;
staff working for the organising bodies, including the City of Milan and AEM SPA.

ART.6
Notice of the tender
The competition tender will be published in Italian, English, French, German and Spanish at the Internet sites
www.arcadata.it
www.aem.it
www.partners.it
www.milanoprogetti.org
in the September and October issues of l'ARCA magazine and in leading international architecture journals. The tender will also be sent to professional associations in Italy and the world's leading nations.

ART.7
Anonymity
Entrants must send in their projects anonymously. A motto made up of a four-figure number and two alphabetical letters (1cm. height) must appear on all the packages and project materials sent in. This number will be recorded in a special register and the entrants' identity will remain unknown till the results's announcements and till the sign of the examining body's final report. The entrant's identity must be placed inside an anonymous, sealed envelope with the motto and nothing else written on the outside. The envelope must contain the entrant's (or the team leader's) name and address.
In case of a team it must contain also the names, addresses and qualifications entitling to take part in the competition of all members, as well as a proxy to the team leader, personally written by each member.

ART.8
Competition materials
Each entrant must send the Competition Secretariat, by post or courrier service, two freely designed A0 sheets (841x1189mm) on a stiff, light-weight support and five slides of the model (simulations are also accepted) fitted on 40x40 mm frames and an A3 file containing pictures of the panels and five slides. These sheets must also be accompanied with a project brief written in either Italian or English on paper or floppy disk (Microsoft Word/Windows) no more than 5,000 characters in length, an estimate of the expected building costs, and a programme showing that it could be carried out in seven months.
Three-dimensional models or tables of different sizes than that indicated will not be accepted.

ART.9
Deadline for sending in entries
Materials must reach the Competition Secretariat, via Valcava, 6 I-20155 Milano by and no later than 30th December 1999, h.6.00pm. (working on the postage date). Any materials arriving after this date will not be taken into consideration.

ART.10
Examining body
The examining body will be made up of nine members who will appoint their own chairman and set the judgement standards as they see fit. Its ruling will be final. The body will meet in Milan by 30th January 2000.

THE BODY WILL INCLUDE THE FOLLOWING MEMBERS:

- Milan Town Council
  Riccardo De Corato, Deputy Mayor
- Milan Town Council
  Maurizio Lupi, Councillor for Territorial Development
- AEM SPA
  Giuliano Zuccoli, Chairman
- l'ARCA
  Cesare Casati, Director
- Partners in Business Communications
  Giorgio Mameli, Managing Director
- Consiglio Nazionale degli Architetti
  Piero Sartogo
- *A Japanese architect Kisho Kurokawa
- *An American architect Cesar Pelli
- A French architect Claude Vasconi
- An Italian architect Piero Castiglioni
- An Italian artist Arnaldo Pomodoro

* awaiting confirmation

ART.11
Prize money
Prize money will be awarded to those projects the examining body judge worthy of merit.
The three prizes amount respectively to:

- First prize EUROs 66,000

and a silver cup that the President of the Italian Republic decided to award for this International Competition

- Second prize EUROs 20,000
- Third prize EUROs 8,000
- Expenses paid for five entrants EUROs 2,000

The winning entrant will be asked to carry out the executive project and draw up the required documents for the contract work. He will be paid in conformity with Italian professional rates.

ART.12
Non-awarding of prize money
Should the competition close without the Examining Body awarding the prize-money specified in article 10 due to the low standard of the projects, the Examining Body will be entitled to award up to 50% of the prize money to those projects judged to be worthy of some recognition.

ART.13
Competition Results
The competition results, together with the Examining Body's report, will be forwarded to the winners within 30 days of the body's finishing its work and will be published in full in the March 2000 issue of l'ARCA.

ART.14
Prize-giving ceremony
The prize money will be awarded to the winners during a public ceremony in the presence of leading academic and public figures following a press conference.

ART.15
Exhibition and publications
l'ARCA and Partners in Business Communications reserve the right to organise an exhibition of all the projects sent in and to publish a catalogue during the first few months of the year 2000.
L'ARCA magazine will publish the winning projects and others it selects during the first few months of the year 2000.
Pictures of the winning projects will be sent off to be published in the world's leading architecture magazines.

ART.16
Property rights and return of materials
The winning projects will remain the property of l'Arca. Should it be decided to actually build any of the proposals, the architects will be directly commissioned.
All other materials may be collected by entrants from June 2000 onwards, provided an exhibition of the projects is not organised in the meantime, in which case they will be available for collection after December 2000.

ART.17
Rules and regulations
All entrants and teams of entrants must comply with all the rules and regulations stipulated in the competition tender if they wish to take part.

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A Modernist Masterpiece in

AFTER DECADES OF DECLINE, RICHARD NEUTRA'S CLASSIC PALM SPRINGS ICON IS BACK. ARCHITECTS MARMOL AND RADZINER HAVE REAWAKENED THE KAUFMANN HOUSE'S RICH MATERIALS PALETTE, EXPANSIVE INTERIORS, AND PANORAMIC OUTDOOR ROOMS.

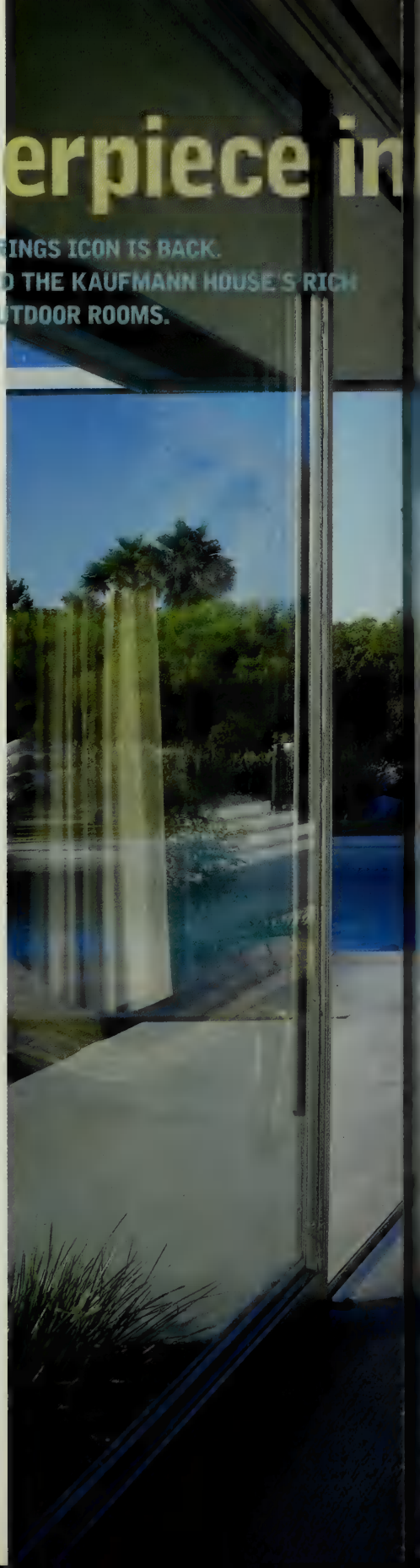
by David Hay

To understand the extraordinary invention that is Richard Neutra's 1946 Kaufmann House, it helps to lie back on a chaise longue atop the gloriette, a sheltered second-floor deck, whose name, the architect believed, referred to the highest deck of a ship. From here, 360-degree views of the rugged mountains and desert around Palm Springs unfold. Shiny sails—55 nine-foot-tall stainless-steel louvers—keep the hot, dry winds and afternoon sun at bay. Creature comforts, a dumb waiter and, for the winter, a fireplace, are housed in two exquisitely laid Utah buff sandstone columns. A tongue-and-groove Douglas Fir ceiling offers shade, while the pool's cool blue surface beckons from below. After a while, a sense of being dreamily at ease with the elemental forces of nature and design takes over. You begin to feel you're floating—a sensation, it turns out, often associated with this house, which an early critic described as a ship riding on rocks and sand.

Modernist icon radically transformed

Seven years ago, a very different sight greeted the current owners, Brent and Beth Harris, when they walked through the front door. The house had been somewhat tragically transformed since its completion in 1946. The celestial views from the gloriette were interrupted, first by an ugly railing and then by clunky air-conditioning units, rooftop ducts, and even exposed electrical conduits. The slatted wooden floor, which once gave

David Hay, who lives in Neutra's 1942 Bonnet House, frequently covers architecture and the arts from Los Angeles.



Remarkably open and expansive, the interiors seem to merge with the surrounding landscape, as in views from the master bedroom toward the pool (right). The same fluid space characterizes Julius Shulman's classic 1947 image from the pool looking back toward the master suite (below left).

PHOTOGRAPHY: © JULIUS SHULMAN (LEFT); DAVID GLOMB (RIGHT)

the Desert Is Reborn.

the deck its visual lightness, had been replaced by concrete terrazzo. The changes were more than superficial. Successive renovations, increasing the square footage from 3,200 to 5,100, had all but obliterated Neutra's original vision.

The house's illustrious beginnings

Designed for Pittsburgh department store owner Edgar Kaufmann—famous for commissioning Frank Lloyd Wright's Fallingwater, six years earlier—this Palm Springs house was one of the purest realizations of Neutra's Modernist ideals. Expressively incorporating the latest industrial materials, the house promoted his concept of easy, flowing spaces for the increasingly nonhierarchical 20th-century family. Harmony between man and nature, between interior and exterior was also essential. Here, on a hillside street in a small town, these ideas all came together in a design that elegantly balanced glass and steel, wood and sandstone, and whose plan roughly resembled a pinwheel.

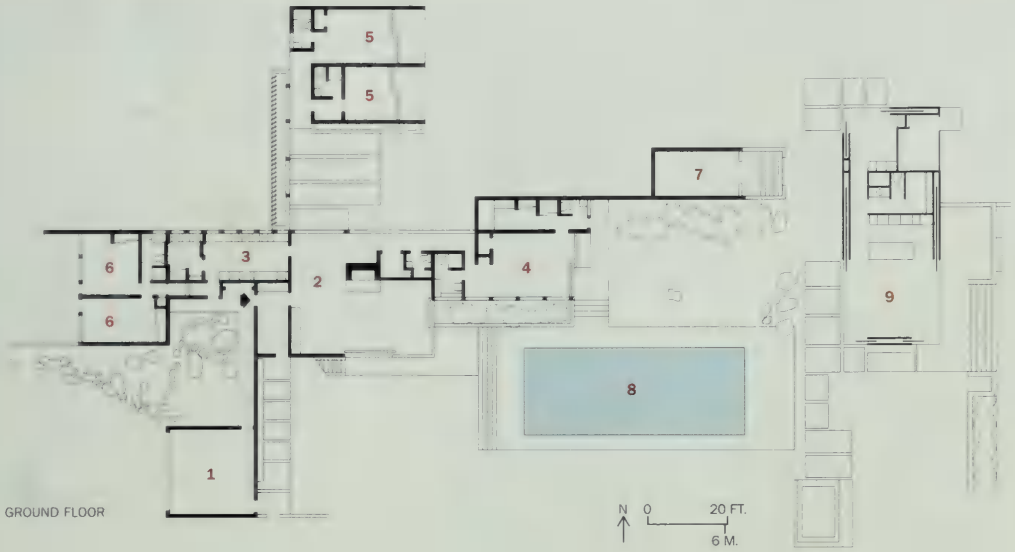
This desert site—which Neutra described as the most "rugged and almost uninhabitable" place imaginable next to the moon—truly inspired him. But, unlike Wright, he saw his building as a "machine in the garden," rather than a form echoing the landscape. But, as the views from the gloriette and interiors suggest, Neutra also considered the house a sanctuary from which to embrace the natural surroundings.

The design's success owed much to an unusually supportive and astute client. Kaufmann corresponded with his architect almost daily during construction and lavished $. 00,000 on the project, roughly $100 per

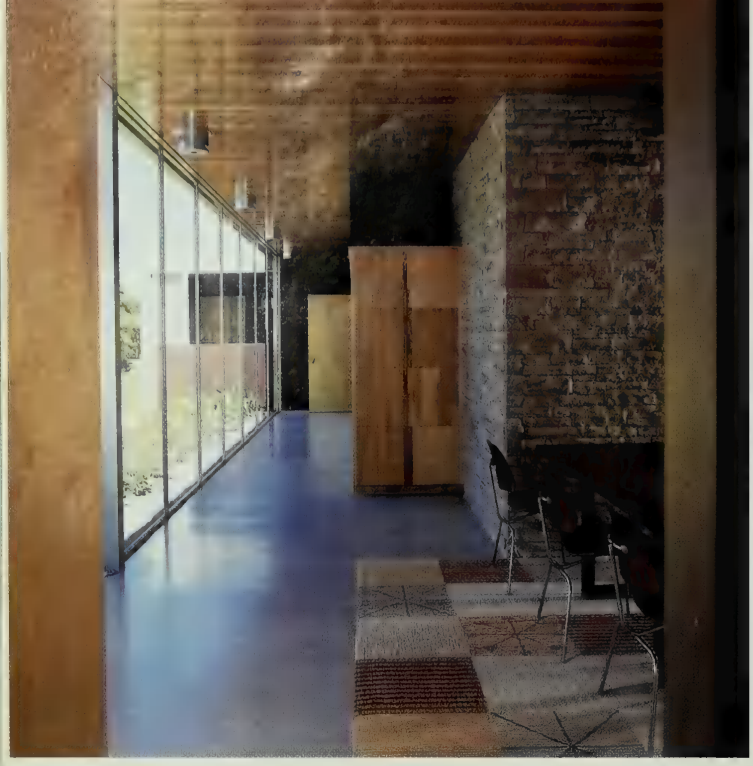
With its unsightly accretions removed, the newly rebuilt gloriette—a second-story deck or outdoor living room—now offers unobstructed panoramic views (above). An open-riser stair, along the side of the house, leads from the patio up to the gloriette (below).

KAUFMANN CORRESPONDED WITH NEUTRA ALMOST DAILY AND LAVISHED $100 PER SQUARE FOOT ON THE PROJECT WHEN THE AVERAGE HOME COST $6 PER SQUARE FOOT.

1. *Car shelter*
2. *Dining/Living*
3. *Kitchen*
4. *Master bedroom*
5. *Guest room*
6. *Staff*
7. *Utility*
8. *Pool*
9. *Pool house*



Beyond the dining table, designed by Neutra, stands the original Utah buff sandstone chimney. Corner sliding doors, opened to the pool patio, enhance indoor-outdoor ambiguities (below).



JULIUS SHULMAN'S TWILIGHT SHOT—ONE OF THE BEST-KNOWN IMAGES OF MODERNIST ARCHITECTURE—ENHANCED THE HOUSE'S FAME AND REPUTATION.

square foot—an astronomical sum at a time when the average American home cost $6 per square foot.

A photographic ideal vs. subsequent incarnations

Even if buried, Neutra's vision was still discernible in 1992, when Beth Harris, a PhD candidate in architectural history at UCLA, and her husband, Brent, a financial executive in Los Angeles, entered the living room. There, recalls Brent Harris, "we saw immediately how the window walls met in the corner without anything between them. We slid back the windows—with some difficulty—and went out to the end of the pool and looked back. If you squinted, the house looked pretty much the way it appeared in the photograph."

The photograph, of course, is the classic twilight image by Julius Shulman. One of the best-known portraits of California Modernist architecture, it has enhanced the Kaufmann House's fame and reputation.

But beyond the remnants of the photographic ideal, the Harrises could see how awkward additions had overwhelmed the plan's original clarity and interrupted the consistency of such materials as birch veneer. The changes included a new dressing room off the master bedroom for the wardrobe of Nelda Linsk, a realtor—famed for her poolside fashion shows—who sold the home four times, once to herself. Someone

New windows edge the way to the master bedroom (top left). Birch-veneer panels (left) match the original grain. Based on Neutra's drawings, the kitchen countertops and floor are faced with cork (above right). In a child's room (opposite top) and throughout the house, the cabinets are replicas, and the paint colors were remixed by Neutra's original supplier. The perforated panel (opposite bottom) originally fronted a hi-fi, but now hides an air-conditioning duct.

had enclosed the patio between the living quarters and guest wing. And Barry Manilow, the owner preceding the Harrises, had decorated each room in a different theme, including a bedroom with an English garden motif and a living room with faux French Regency furnishings.

But those who owned the house after Edgar Kaufmann's death there in 1955 were not simply imposing their tastes on a masterpiece. They were also attempting to make a winter retreat livable all year-round. Though Neutra installed radiant heating in the floors, he'd met his client's request for a seasonal home and supplied no air conditioning—an essential amenity in a region where summer temperatures hit 120 degrees.

The new owners' bold approach

When Brent and Beth Harris bought the house and evaluated the repairs necessary to keep it from disintegrating, they made a bold decision. They would go further, bringing the architecture back to the moment they felt most clearly coincided with Neutra's original intent. That was the twilight evening in 1947 when Julius Shulman fortuitously asked Mrs. Kaufmann to lie by the pool—to block a light—and took the photograph.

Ironically, as midcentury architecture ages, the Harrises, like others, set out to historically restore or recapture Modernism: a philosophically ahistorical style.

Recreating Neutra's finishes, Marmol and Radziner paved Mrs. Kaufmann's (left) and the other bathrooms in cork—and even tiled the floor and walls of her husband's shower stall with this luxuriant (and improbable) material.

Their decision to reclaim a 1947 ideal challenged a traditional approach to architectural restoration, which demands a more straightforward refurbishment of what remains on-site. In the Kaufmann House, however, so many original elements had been destroyed that pure restoration was out of the question. But what was the house like in 1947? What records would show it in full detail? To carry out the revitalization, the Harrises engaged the Santa Monica firm of Marmol and Radziner, which had restored Neutra's 1950 Kun House #2 in the Hollywood Hills.

By 1995, the Kaufmann House "resembled a carcass," says Ron Radziner, AIA, the effervescent, long-haired architect, who, with partner Leo Marmol, AIA, had already started down the long road of revitalizing it. They demolished the additions and shipped away many original surfaces for refurbishing. In fact, they tore down so much that many onlookers perceived the architects and their clients as destructive, but few could have predicted the lengths to which the design team would go to preserve what remained and accurately replicate what had been lost.

Marmol and Radziner began at the UCLA Research Library's Special Collections Branch, where the original drawings were kept. Denied permission by Neutra's son Dion to photocopy them, they hand-copied the sketches, including every notation down to paint colors. They interviewed those who knew the house well: architect Albert Frey, who designed a home for Raymond Loewy on the adjacent lot, and the Moorten family, who had landscaped the original garden.

The most accurate record of what had actually been installed lay in Julius Shulman's 1947 photographs, some of which had never before been printed. But perhaps the greatest map to the house lay buried in its own walls and floors. In a servant's rooms, for instance, the word "oyster," the color used, was penciled onto the plaster beneath many coats of paint. "It was like an archeological dig," recalls Radziner.

On the exterior, Neutra had applied a plaster-and-mica mixture. He thought the shiny mica flecks would reflect sunlight and thus reduce heat impact. Marmol and Radziner contacted the U.S. Bureau of Mines to locate current sources for the mineral. Matching wall samples with those from active mines, they painstakingly replicated Neutra's recipe and devised a fabrication technique: Moments after one painter lay on new glazing compound, another would spray on the mineral.

The architects not only rebuilt birch-veneer cabinets throughout the house, but also identified the grain of each panel from photographs and matched it precisely. In a daring display of luxury, Neutra had even lined Mr. Kaufmann's shower stall with cork—a finish that Marmol and Radziner recreated with urethane coatings to prevent water damage.

The installation of a sophisticated heating and cooling system presented another challenge. Not wishing to interfere with the aesthetic integrity of Neutra's design—a visually and conceptually thin piece of architecture without plenum or crawl space—the architects tunneled ducts under the house, channeling cool air from a unit in a new pool house that they designed. They cleverly used built-in furniture to hide other vents and ductwork. A huge return-air outlet lurks behind a perforated panel in a living-room cabinet, which had concealed a hi-fi speaker in its first incarnation.

This project, an extraordinary act of rejuvenation, taking more than five years, certainly cost many times the original $300,000. (The Harrises decline to disclose their budget publicly, but *Vanity Fair* has cited a "rumored $4.5 million" price tag.) One result of placing new historically correct materials alongside original intact elements is a contrast in patinas. The concrete path from the front gate into the entrance hall, for example, displays its age, whereas the recently poured concrete floor in the living room, which abuts it, has a bright sheen. Until time melds the patinas, many of the interior details will announce themselves as replicas.

The Harrises, all too familiar with the house's checkered past, made a gesture of patronage worthy of Edgar Kaufmann. Swearing to keep history from repeating itself, they are determined to protect the building from future deterioration. To reinforce the structure, they placed steel reinforcing beams in the plaster walls where space allowed. Their complex new heating and air-conditioning system will slow the aging process accelerated by the harsh desert climate. New drains, sunken and hidden from view in the flat roofs, assist water runoff. The Harrises purchased two adjacent lots and landscaped them to protect future views.

This Modernist icon now serves as a weekend retreat for the owners and their two small children. Contemporary Californians, they spend considerable time in the new pool house, which contains, among other amenities, a spa. The olive-green, open-air structure was consciously designed not to compete with the main house. But even from here, as from the wonderfully primordial desert garden, which now surrounds the house, Neutra's reinvented masterpiece is never far from its guardians' watchful eyes. ■

Project: *The Kaufmann House Restoration*
Architect, interior designer, contractor: *Marmol and Radziner Architects—Leo Marmol, AIA, and Ron Radziner, AIA, principals*
Client: *Brent and Beth Harris*
Consultants: *Cass Rogers (structural); Mel Bilow & Associates (mechanical); John Snyder & Associates (electrical); Seebohm Ltd. (architectural conservation); Reginald Hough (concrete); Eric Lamers and William Kopelk (landscape)*

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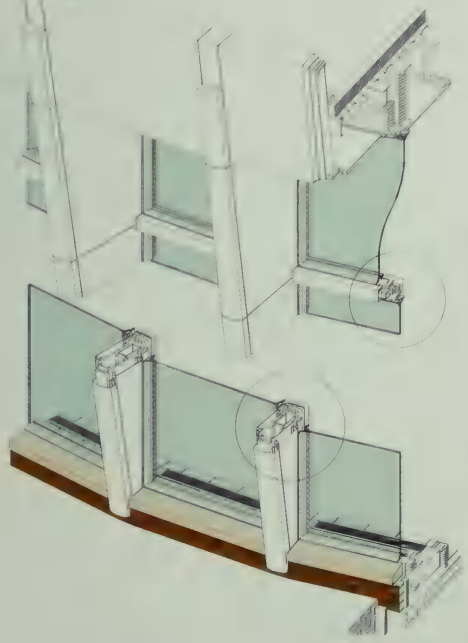

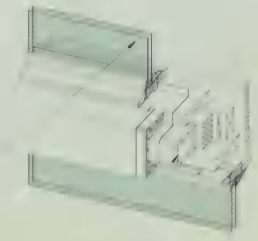

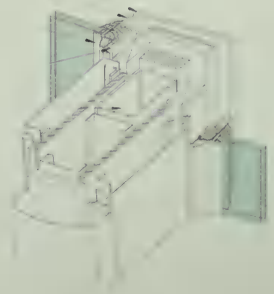

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CIRCLE 49 ON INQUIRY CARD

and the offices for ad agency Mad Dogs and Englishmen, both in Manhattan. In the latter venue, a contraption that FACE prefers to call "spatial equipment" (previous pages) is a freestanding, all-in-one kitchen machine.

Fabricated from stainless steel, wood, and glass, the unit contains an oven, stove, and sink with counters for slicing, dicing, and dining (replete with benches on wheels). FACE assembled the kitchen in its Brooklyn shop before transporting it to Manhattan and hooking it up in the offices of Mad Dogs and Englishmen, for which the architects also designed steel-framed workstations, lamps, and vitrines.

In a residential loft (right below), FACE's steel cantilevered stair—skinnier than a fire escape—shows that anorexia in architecture can be stunning. Because the steel treads are cantilevered, only one stringer is needed, not two, creating a remarkably lithe and lean object. "We tried to exploit the qualities of steel," says Fouser. (Warning: Do not descend after three martinis.)

PHOTOGRAPHY: © LOOM (PROJECTS, RALPH NELSON; PORTRAIT, COURTESY OF THE ARCHITECT); SUMO (PROJECTS, PIERO RIBELL; PORTRAIT, ALEJANDRO HERRERO-OLAIZOLA)

STUDIO SUMO

Keep it light, flexible, detachable, and demountable: this axiom defines the approach of the four-year-old studio of Sunil Bald (above left) and Yolande Daniels (above right). As their Flip-Flop Store/Studio in New York illustrates, design can do much to mitigate the dilemmas of nomadic life. The two partners, who earned master's degrees in architecture from Columbia, work together as a firm, but teach apart—she at the University of Michigan and he at Cornell.

In converting the 300-square-foot storefront for living and working, Daniels and Bald wanted an interior

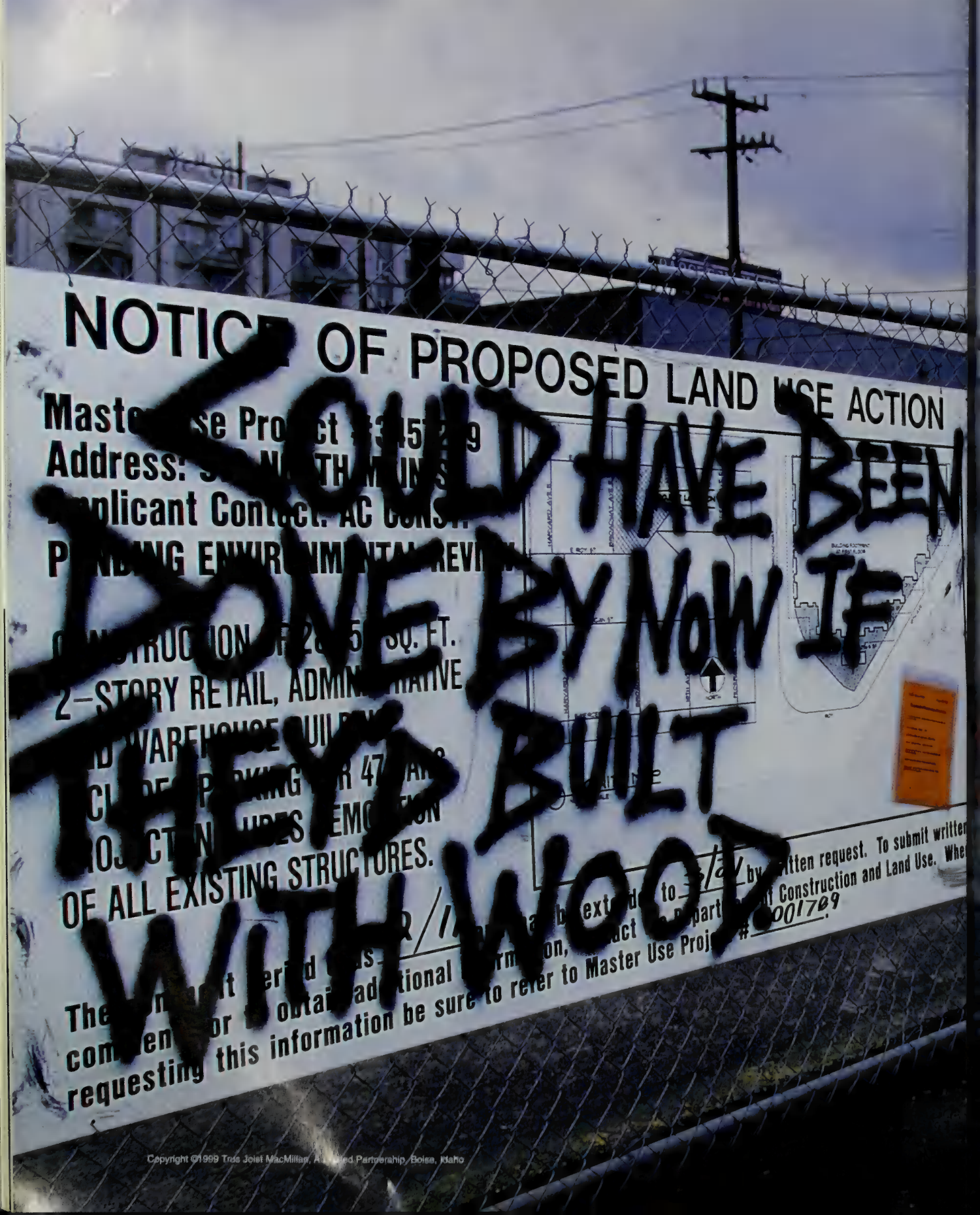
LOOM

As the name suggests, this six-year-old Berkeley-based studio takes seriously the interweaving of architecture, art, and environmental design. Formed by Ralph Nelson (left), who earned his master's in architecture at Yale, and Raveevarn Choksombatchai, who holds master's degrees in architecture and landscape architecture from Harvard, LOOM makes even small interior elements highly architectural.

The design of their layered, steel-rod-and-mesh "shadow chair" was generated by casting shadows with a spotlight on a conventional chair. It's not a chair where you're "going to watch TV and drink a beer," says Nelson, "it's more of a temporal chair, where you'd sit to take off your shoes." Moving to accommodate the human body, it creates a spatial dynamism through the angularity of its frame and diaphanous quality of its steel wire mesh.

A bar and buffet, mounted on a stone fireplace in a Berkeley house, has linear steel sections, nickel-silver drawers on pivot hinges, and walnut cabinetry. Its length extends from six feet, six inches to 11 feet, 6 inches. Dramatically turning the corner, it animates the space.

they could assemble and disassemble quickly and efficiently. Combining custom design with everyday found objects, they devised wall-mounted detachable elements that could all pack into a 4-by-5-by-10-foot cubicle. Rubbermaid containers became storage cabinets, and an industrial, 32-inch-diameter stainless-steel steam kettle—probably from a restaurant—was transformed into a bathtub. A cantilevered table of folded and polyurethaned sheet steel is another improvised installation in the partition-free open space.



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CIRCLE 50 ON INQUIRY CARD

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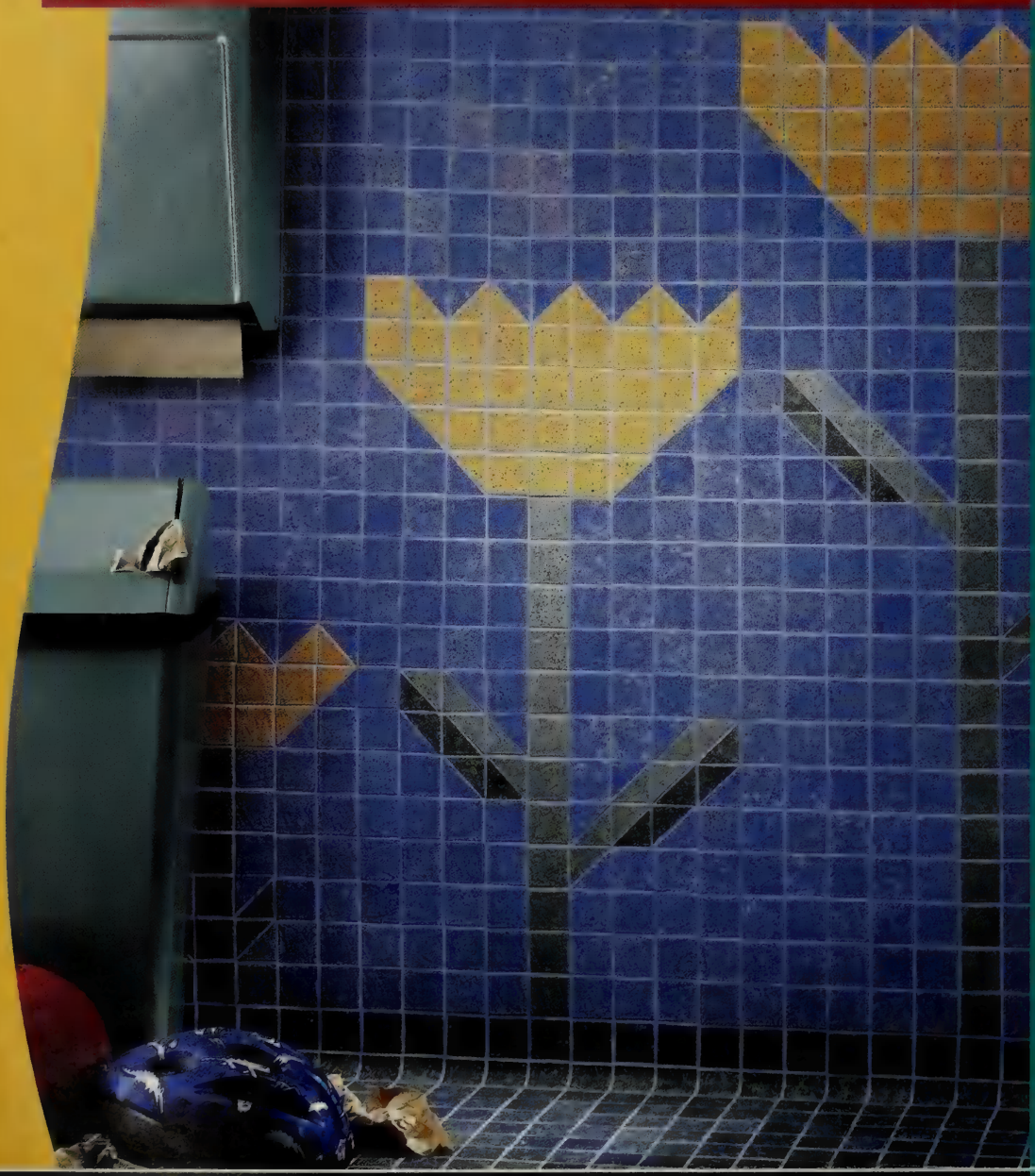

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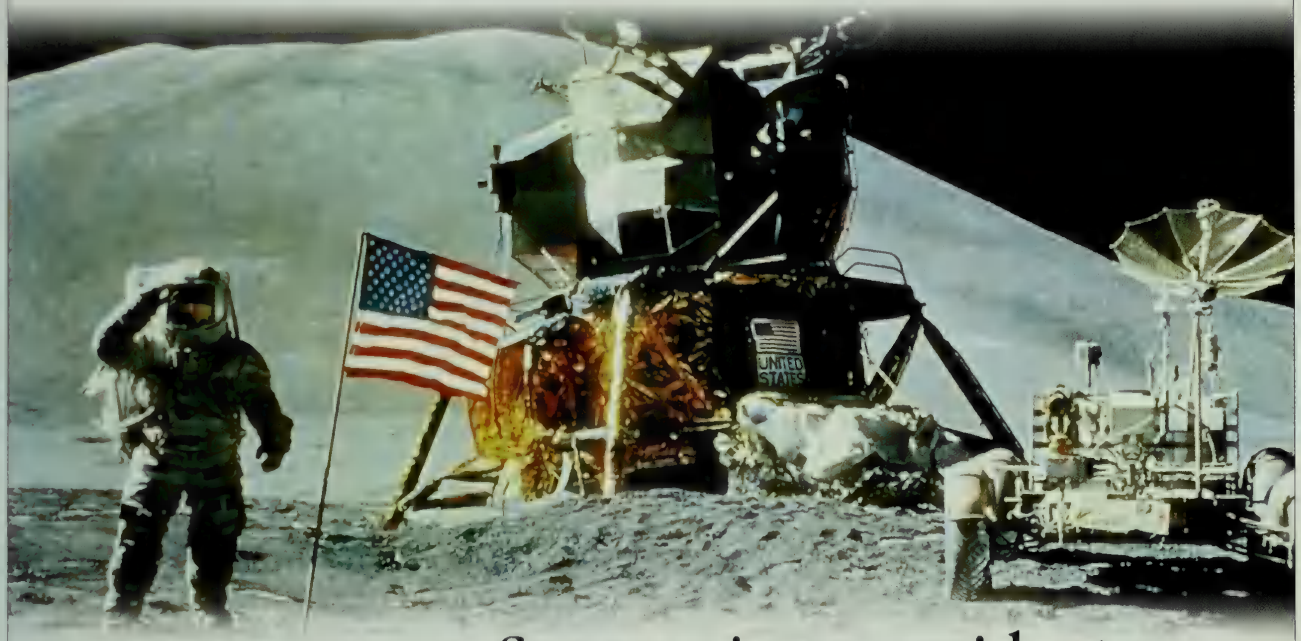

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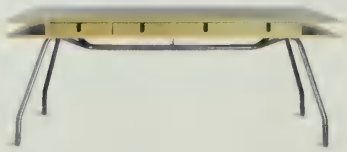

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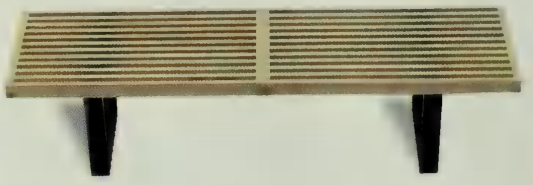

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CIRCLE 54 ON INQUIRY CARD

Back to

by Lee D. Mitgang

As the century's final school year begins, are architects ready at last to make peace with the institutions that educated them? For years, architects have greeted questions about the state of architectural education with a grumpy litany of the things they believe young graduates should know—but all too often don't—about the real world of practice. To find out if this view still predominates, RECORD posed 10 questions to a sample of our readers. Some answers were expected, and others were surprising.

Many of the respondents continue to believe that too many architectural educators are deaf to the evolving requirements of a complex, global profession: 53 percent of our sample disagreed either "strongly" or "somewhat" that the schools they attended prepared them well for office realities.

"Architects have always talked about the lack of preparation for practice that architecture schools provide. The schools do not listen," wrote Stephen H. Gegner, AIA, who has his own firm in Mirietta, Ohio.

A strong majority favored pressing schools to include more practical content in their curricula—in particular, they advocated requiring practical experience as a condition for graduation and permitting students to take the Architect Registration Examination (ARE) immediately after school.

At the same time, our findings hint that more positive forces may be at work in shaping future relations between education and practice. Overall, we detected declining animosity toward academia and increasing readiness to applaud architectural education's distinctive characteristics than we did a few years ago when magazines were apt to carry apocalyptic headlines such as, "The Schools: How They're Failing The Profession," (Progressive Architecture, *September 1995).*

More than 6 out of 10 respondents, for example, felt their schools provided solid liberal educations. Despite recent criticisms, design juries got a resounding vote of confidence from more than two-thirds of our respondents. And whatever the strengths and shortcomings of the nation's architectural faculty, most people in our sample rejected the idea of requiring all faculty to be licensed architects. Our survey produced other surprises. More than half of the respondents thought schools should make racial and ethnic diversity among students and faculty a top priority. And even as computer skills have become essential to young architects seeking jobs, 55 percent worried that schools may be sacrificing drafting skills by overemphasizing computer-aided design.

Whether these collective findings signal a belief that schools have actually improved, or merely that a booming economy has put practitioners in a more generous mood, we found a willingness to temper habitual criticisms with acknowledgment of architectural education's strengths. Even more encouraging, we sensed a growing readiness to take responsibility for the system's chronic shortcomings: more than 6 out of 10 respondents conceded that practicing architects could be doing more to support schools and students.

School

ARCHITECTS SOUND OFF ON 10 CRITICAL ISSUES FACING ARCHITECTURAL EDUCATION

A RECORD READER POLL

RESPONDENT PROFILE

TITLE/POSITION

RINCIPAL	38
RESIDENT/CEO	25
CE PRESIDENT	1
OARD CHAIRMAN	2
OLE PROPRIETOR/OWNER	12
ARTNER	31
SSOCIATE	5
ENIOR ARCHITECT	2
RCHITECT	3
IRECTOR OF DESIGN/ DESIGN PARTNER	5
ROFESSOR OF ARCHITECTURE	2
OB CAPTAIN	1
ESIGNER	1
UNIOR ARCHITECT	1
RCHITECT ASSISTANT	1
NTERN ARCHITECT	8
COORDINATOR	1

GENDER

MALE	126
FEMALE	27

HIGHEST DEGREE EARNED

B ARCH	65
M ARCH	75
BS ARCH	1
BFA	1
PHD	3
M BUSINESS ADMIN	2
M BUSINESS POLICY	1
M URBAN DESIGN	3
M BUILDING DESIGN	1

ARCHITECTURE SCHOOL ATTENDED

HARVARD UNIVERSITY	18
CORNELL UNIVERSITY	8
COOPER UNION	5
UNIVERSITY OF IDAHO	1
UNIVERSITY OF PENNSYLVANIA	10
UNIVERSITY OF OREGON	1
NORTH CAROLINA STATE	4
COLUMBIA UNIVERSITY	19
YALE UNIVERSITY	16
PENNSYLVANIA STATE UNIVERSITY	2
UNIVERSITY OF VIRGINIA	4
RICE UNIVERSITY	2
SYRACUSE UNIVERSITY	6
UNIVERSITY OF CALIFORNIA, BERKELEY	9
GEORGIA INSTITUTE OF TECHNOLOGY	5
WASHINGTON UNIVERSITY	3
KANSAS STATE UNIVERSITY	1
PRINCETON UNIVERSITY	2
UNIVERSITY OF CALIFORNIA, LOS ANGELES	5
CLEMSON UNIVERSITY	1
TULANE UNIVERSITY	2
CITY COLLEGE OF NEW YORK	3
UNIVERSITY OF MIAMI	1
UNIVERSITY OF COLORADO	1
MASSACHUSETTS INSTITUTE OF TECHNOLOGY	6
RHODE ISLAND SCHOOL OF DESIGN	4
UNIVERSITY OF ILLINOIS, CHICAGO	1
TEXAS TECH UNIVERSITY	4
VIRGINIA POLYTECHNIC INSTITUTE	2
UNIVERSITY OF SOUTHERN CALIFORNIA	4
UNIVERSITY OF CINCINNATI	2
UNIVERSITY OF MICHIGAN	3
TEXAS A&M UNIVERSITY	3
UNIVERSITY OF LONDON	1
UNIVERSITY OF DETROIT	1
UNIVERSITY OF MEMPHIS	1
PRATT INSTITUTE	7
UNIVERSITY OF OKLAHOMA	3
OKLAHOMA STATE UNIVERSITY	1
UNIVERSITY OF MARYLAND	3
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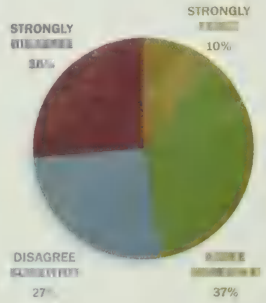
UNIVERSITY OF ILLINOIS, URBANA	2
MIAMI UNIVERSITY (OHIO)	1
OHIO STATE UNIVERSITY	1
IOWA STATE UNIVERSITY	4
RENSSELAER POLYTECHNIC INSTITUTE	2
UNIVERSITY OF PUERTO RICO	1
UNIVERSITY OF FLORIDA	3
CARNEGIE MELLON UNIVERSITY	3
UNIVERSITY OF ARKANSAS	1
UNIVERSITY OF WASHINGTON	1
WASHINGTON STATE UNIVERSITY	3
NORTH DAKOTA STATE UNIVERSITY	1
THE ARCHITECTURAL ASSOCIATION	2
SOUTHBANK UNIVERSITY	1
UNIVERSITY OF SOUTH FLORIDA	1
ARIZONA STATE UNIVERSITY	1
CRANBROOK ACADEMY	1
JORDAN UNIVERSITY	1
UNIVERSITY OF NORTH CAROLINA, CHARLOTTE	1
NEW JERSEY INSTITUTE OF TECHNOLOGY	1
UNIVERSITY OF TEXAS, AUSTIN	1
CALIFORNIA POLYTECHNIC STATE UNIVERSITY SAN LUIS OBISPO	1

ABOUT THE SURVEY

Survey instruments were mailed to 450 RECORD readers in May and June. The sample was not scientifically randomized, but the 153 who returned completed surveys ended up well-balanced in terms of geography and the years they attended school. Over 17 percent were women, virtually identical to the actual percentage of females in the profession, according to latest federal data. Collectively, respondents attended 66 U.S. and foreign schools of architecture for part or all of their professional education. We invited participants to elaborate on their answers to our 10 questions in writing. In addition, we interviewed more than two dozen respondents by telephone. By good luck, our sample turned out to be highly informed, articulate, and diverse in their views on education and the profession. They included world-renowned designers, such as Richard Meier, FAIA, and Michael Graves, FAIA; 114 respondents who identified themselves as top executives or firm owners; at least 20 who both teach and practice actively; and 15 recent graduates who now occupy junior positions in architecture firms.

Lee D. Mitgang, a contributing editor, was coauthor of the 1996 Carnegie Foundation report, "Building Community: A New Future for Architecture Education and Practice."

1 The architecture school(s) I attended did a good job preparing me for the realities of business and practice.



It may be a tired question—even an "absolute red herring" as one New York City architect—who also teaches—tartly characterized it. Still, the contention that architecture schools as a group are too theoretical and disconnected to the realities of the practice has been at the heart of the profession's complaints for decades. And that ancient lament remains in full force, according to our poll.

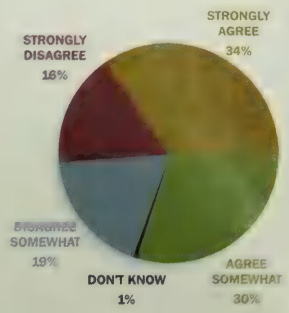
"My school didn't prepare me for the real world," said a recent MIT graduate with her own practice in New York City. "We interview students who expect to come in and design, not realizing that they don't have a clue about how to build."

Our survey suggests that the old lament that schools are too distant from the practice world remains widely held. Some respondents were particularly concerned over the lack of preparation for teamwork. "The model of future practices will include the assembly of teams of differentiated talents and will require extraordinary competence, ease, and self-awareness when working in groups," wrote W. Mason Smith III, AIA, president of Shepley Bulfinch Richardson & Abbott in Boston.

Others questioned whether school was the best time or place to be overly preoccupied with practical matters. "We didn't spend much time on the business of architectural practice when I was in school," said Brian F. Larson, AIA, vice president of Ayres Associates in Eau Claire, Wis., who attended the University of Illinois' architecture program in the 1950s. "I don't believe the phrase accounts receivable ever passed anyone's lips. But I also don't believe I would have been very interested, to tell the truth. Architecture was what interested me. The schools can't teach everything."

"Schools only do part of the job of preparing architects," agreed Kevin Hart, AIA, director of design at Gensler and Associates in San Francisco, who attended North Carolina State and Yale during the 1970s. "It's okay for schools to be different. Messy vitality is better than dull, uniformly effective regimentation."

2 The architecture school(s) I attended did a good job providing a well-rounded liberal education.



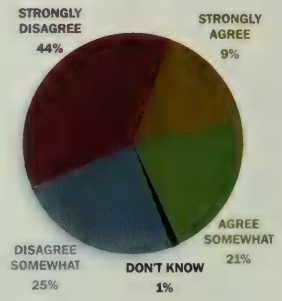
Besides demands for more professional content, architecture schools have always faced the accompanying challenge of providing graduates with a broad liberal education to prepare them as well-rounded, polished, flexible, ethical professionals ready to adapt to complex problems and to express themselves and their ideas. Most respondents, in fact, gave their schools higher marks in the liberal arts; but as with practical and business knowledge, the messages were mixed.

Nearly two out of three, especially those who studied architecture as graduate students, praised the breadth of education they received. "Architecture students need to learn proper English, writing, spelling, debating, and negotiation skills," wrote Andrea Clark Brown, AIA, principal architect of Andrea Clark Brown Architects, in Naples, Fla., who strongly agreed that her years at the University of Virginia during the 1970s gave her a solid diet of liberal-arts studies.

Others commented on the weak grounding in liberal studies in some recent graduates, especially those who attended five-year degree programs. "The BArch degree provides a fast-track means of learning a great deal about architecture, architectural technologies, design, and history," wrote Andrei S. Harwell, an intern architect at Hardy Holzman Pfeiffer Associates in New York City who "strongly disagreed" that his BArch at Carnegie Mellon in the 1990s provided a good liberal-arts education. "It does not, however, prepare you to be a well-educated, well-rounded, well-read, intellectual individual."

"I've had employees who can barely read specifications or topographical maps or write a business letter," a Bristol, Conn., practitioner told us. "There's a whole generation that can't spell. What if one of these people needed to write a proposal for a client? What kind of impression would that leave? "The ones who have done best," he added, "got a liberal education first, then went on to graduate school for their professional degree."

3 The jury system of evaluating design work in schools of architecture is abusive, undermines teamwork, and should be reconsidered.



Even before Kathryn H. Anthony's 1991 landmark book, *Design Juries on Trial: The Renaissance of the Design Studio* (1991, Van Nostrand Reinhold, New York), decried the star-chamber atmosphere of juries at some schools, faculty at the University of Oregon, Miami University of Ohio, and Southern California Institute of Architecture were turning to less Kafka-esque ways of evaluating studio work. While some echoed the concerns about the conduct and educational worth of juries, a solid majority of our sample considered them a powerful teaching tool that provided lasting lessons about the rigors of professional life.

"The jury system is one of the finest teaching tools we have," said William Cannady, FAIA, design principal at Willis, Bricker & Cannady in Houston and an architecture professor at Rice University. "Students get the chance to defend their thinking before their peers and faculty. We've seen bullying, but you see that in the real world."

"I don't think it's any more abusive than real life," said Christopher Mehren, AIA, a principal of Michael Maltzan Architecture in Los Angeles. "It's a great training ground to justify your work."

A critic of juries, Mark Simon, FAIA, a partner in Centerbrook Architects and Planners, in Centerbrook, Conn., who has taught at Yale, the University of Maryland, the Rhode Island School of Design, and North Carolina State, called them "a poor imitation of real life."

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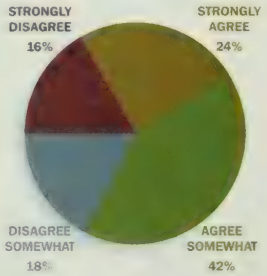
"As an architect," he said in a telephone interview, "there are so many people you have to learn to get along with: clients, contractors, code officials, team members, and that's just for starters. Juries may be good for some people; for others, they can be terrible. Either way, it's a very incomplete system of education."

4 There should be a better balance in architecture school between the time spent in design studio and the time devoted to learning other subjects, such as the technical and business aspects of the profession.



As with juries, studio time has a near-mythic hold on the affections and recollections of most architects. But among our sample, the majority thought some reform was in order.

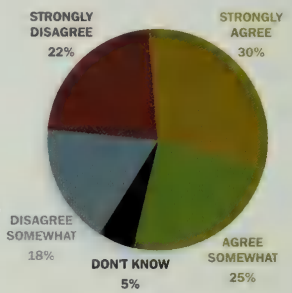
On paper, design studios typically account for 40 percent or less of the required credit hours for a professional degree. But the actual time and energy spent on studio projects is typically far more than that—enough to elbow aside other aspects of the profession that students should be learning. Many in our poll defended design studios as superb teaching tools for applying and synthesizing knowledge. We also heard from others who felt that the all-nighter studio culture that is the rule at many schools teaches the wrong lessons about time management, teamwork, and other aspects of the profession besides design.

Wayne Hughes, AIA, president of Hughes Group Architects in Sterling, Va., noted that "less than 20 percent of the profession are designers and less than 10 percent of their time is design time. We need to train architects with technical and administrative skills."

Some told us the solution was not necessarily to reduce studio time, but to use it more creatively. "I think the big key is integration of design with everything else—technology, business, codes," wrote Linda Searl, FAIA, president of Searl and Associates in Chicago. "I have taught graduate studios where the students not only couldn't draw but also couldn't even design a stair or exit in a building. We will not be crucial to the construction process unless this problem is overcome."

Others questioned whether any such shift in curricular emphasis would be effective. "In my experience," wrote Margaret Gorman, a recent graduate of Columbia University's architecture program, "I spent a significant amount of time in technical seminars and business classes, but I don't feel that I retained much of this information because it was so far removed from the reality of construction and project management. The technical and business aspects are simply better learned in the work environment where there is a direct application."

5 To encourage schools to place greater emphasis on practical and technical knowledge, students should be permitted to take at least part of the ARE immediately after graduating.



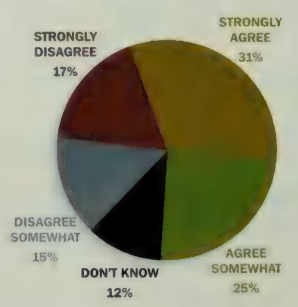
Lawyers can take the bar exam immediately after completing their professional degrees. Civil engineers take half their licensing exams at the end of their fourth year. Earlier this year, the boards of the AIA and the American Institute of Architecture Students endorsed the idea of allowing students to take the ARE immediately after graduation, instead of making them wait until after internship, as they now must do in all but four states. Students believe that this approach, which would require state-by-state approval by licensing boards, would help boost their early pay and job status. The AIA board thinks it might help bridge the gap between education and practice by prompting schools to emphasize more practical and technical knowledge.

Michael Graves, FAIA, who has taught at Princeton for 37 years, was one of those who strongly agreed with letting recent graduates take those test portions dealing with subjects like structures and mechanical systems learned mainly in school.

Charles Gwathmey, FAIA, a partner in Gwathmey Siegel & Associates Architects in New York, also favored the idea: "There are courses during school that are part of the base knowledge on the test, like structures. To have to come back after three years and try to reconstitute that knowledge is a waste of time."

Others doubted that changing the timing of the test would benefit students or curricula: "Too much real-world teaching will diminish emphasis on problem solving and creative thinking," said Rand Elliott, FAIA, president of Elliott & Associates in Oklahoma City. "There is time after graduation to learn the boring stuff."

6 Schools of architecture are overemphasizing computer-aided design at the expense of drawing skills.



This one of the great ironies of our profession. While almost every help-wanted ad contains some version of the requisite "CAD skills a must," practicing architects bemoan the fact that recent graduates don't know how to draw. As schools have struggled to respond

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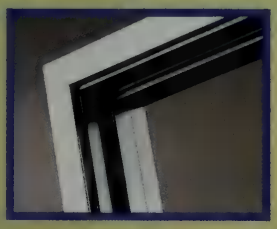

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to those market demands, our survey reveals worries among practitioners that the rush to computerized education may occur at the expense of creativity, the ability to visualize and think spatially, and knowledge gained through learning traditional drafting.

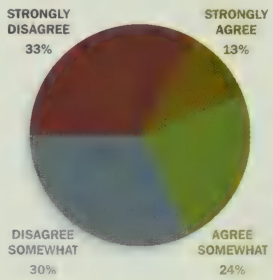
"Architects must know how to draw; it is fundamental to the way we think," Cathy Simon, FAIA, president of Simon Martin-Vegue Winkelstein Moris in San Francisco, told us. "Ours is a totally electronic office, but I still think schools do a total disservice if they require all presentations in CAD." Schools like Berkeley, where she teaches a graduate studio, emphasize computers but have not sacrificed drawing skills.

"Many students coming out of architecture school today know how to use the computer but not much more," wrote Jennifer Mauldin, a recent graduate of Texas A&M and an intern at Three Architecture in Dallas.

William Cannady, FAIA, teaches a course called "Pencils and Computers" at Rice University and discovered that students who have learned only CAD often lack very basic knowledge such as how to draw shadows and how the sun works.

Others argued that schools still aren't stressing computers enough: "There hasn't been a drawing table in our firm in almost 10 years," said R. Nicholas Loope, FAIA, president and chief executive of The Durrant Group, Inc., in Phoenix. "I don't think we should stop teaching students to draw. But this paradigm shift is dramatic, and we need to do much more in school to respond to it."

7 All faculty at accredited schools of architecture should be licensed architects.



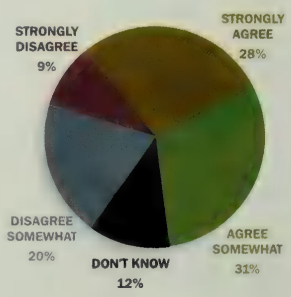
Of the 4,149 full- and part-time architecture faculty teaching at accredited programs in the 1997–98 academic year, fewer than half—1,982—were licensed architects, according to data from the National Architectural Accrediting Board (NAAB). Still, nearly two-thirds of our participants rejected the notion of banishing all nonarchitects from faculty. Some indicated that they might have agreed if the question were limited to design faculty. But many more seemed to feel that the key to improving the quality of faculty was not to narrow its perspectives, but to maintain a varied mix of backgrounds and viewpoints. Above all, our poll indicated that it is most important to ensure that the faculty are skilled at teaching.

"Many of the best teachers I had were not licensed architects," wrote a recent graduate of the Georgia Institute of Technology. "I see no connection between what makes a good teacher and the ability to pass the ARE."

Requiring most or all faculty to be licensed is rare but not unheard of. Montana State University's School of Architecture has such a policy (modified two years ago to permit a few unlicensed new hires and those with PhD's in related fields to teach). Clark Llewellyn, the school's director, says the policy has had at least two payoffs. An exceptionally high portion—90 percent—of the school's graduates successfully enter the profession. And faculty who have experienced the teamwork found in real offices tend to display a camaraderie in curricular matters not typical at many other schools.

The dissenting opinion held that a readiness to practice should not necessarily be the schools' primary goal. Architecture is a complex profession and the faculty should reflect that richness. Stephen Muse, FAIA, principal of Muse Architects in Washington, D.C., told us that a rich faculty mix is vital not only for schools, but also for the profession: "There are many who feel that schools should just produce ready-made practitioners. But schools have to walk a fine line. They have to support the profession while asking questions and trying to make architecture better. A diverse faculty with diverse perspectives can help do that."

8 As a group, practicing architects and architecture firms have not been committed enough to supporting schools of architecture financially or through volunteer efforts and mentoring.



Do architects believe they are living up to their collective responsibility to support architectural education? Certainly, many practicing architects give guest lectures, join alumni associations, or sit on juries. Not long ago, Kansas State University listed more than three dozen ways that local architects interact with academia, such as design charrettes, career fairs, exhibitions, and other events. Still, a clear majority of our sample agreed that too often, practitioners remain at arms' length from the schools. "While some firms give a lot, most give nothing," said Calvin F. Lewis, FAIA, principal of Herbert Lewis Kruse Blunck Architects in Des Moines.

Lack of student mentoring was a particular weakness cited by respondents, even at schools with reputations for warm relations with area practitioners. "I don't see practicing architects taking any real interest," said Randy Brown, AIA, principal of Randy Brown Architects in Omaha, an adjunct professor at the University of Nebraska who volunteers several times a year as a juror.

MANY SEEMED TO FEEL THAT THE KEY TO IMPROVING THE QUALITY OF FACULTY WAS NOT TO NARROW PERSPECTIVES, BUT TO MAINTAIN A VARIED MIX OF BACKGROUNDS AND VIEWPOINTS.

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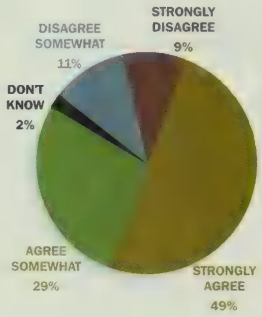
Many argued that the failure to connect goes both ways. Several Boston-area architects wrote us, for example, that with the exception of the Boston Architectural Center, whose faculty draws heavily from the region's practice community, many New England architectural schools are perceived as indifferent to area firms.

"The schools do not appear interested in the profession," wrote James McCullar, FAIA, principal of James McCullar & Associates in New York City who attended Rice and Columbia universities in the 1960s. "This is in contrast to when I was in school, when the schools solicited the involvement of the profession and when deans were practitioners. This is a real problem at a time when the profession is becoming more complex."

Bruce Fowle, FAIA, principal of Fox & Fowle Architects in New York City, wrote that while he agreed "somewhat" that architecture firms could be doing more for schools, "providing apprenticeship to the untrained and paying a $30,000-plus salary is a major contribution."

Finally, some argued that the disconnect is a telling barometer of the lack of synchronicity that persists between academia and the practice world: "When lack of support occurs," wrote Frank Ricks, principal of Looney Ricks Kiss in Memphis, "it is often due to a difference in goals or perspectives. Alignment would bring support."

9 All architecture schools should require students to have some form of practical experience as a condition for graduation.



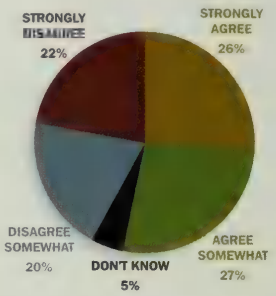
Requiring practical experience for a professional degree drew more support than any other issue in our survey: nearly 79 percent backed the idea strongly or somewhat. Architecture schools, our respondents seemed to say, cannot be expected to teach all aspects of the profession because it is far too multifaceted. A practical-experience requirement would help fill the void.

By one recent count, only about 15 percent of the nation's 108 accredited architecture schools require internship or practical experience to graduate. The preceptorship program at Rice University and the cooperative internships at the University of Cincinnati are long-standing examples. Proponents point out that there are many other ways to gain practical experience, such as mentoring arrangements with firms or incorporating work-site experience into studio projects.

Even those who agreed with the idea, however, foresaw practical difficulties if it were universally required. It might prove to be a particular hardship for students attending schools in remote or depressed locations where work opportunities for novices could easily dry up in lean times.

Others, like Cathy Simon, said such a requirement might have little value: "Student interns, unless they work for a very dedicated firm, usually end up as go-fers."

10 Schools of architecture should make gender, racial, and ethnic diversity in their faculties and student bodies a top priority.



The biggest surprise in our reader poll came last: a majority of our predominantly male respondents agreed that schools need to help rid architecture of its reputation as a "white, male profession."

In the 1997–98 academic year, 36 percent of the 33,673 undergraduate and graduate students enrolled in architecture programs were women, up slightly from 32 percent five years earlier, according to the latest annual NAAB data. But only 5.8 percent of the nation's architecture students are African American, little changed during the 1990s. Hispanic students accounted for 7.4 percent of the national total in 1997–98, down from nearly 9 percent in 1993–94.

Of the nation's architectural faculty, there were 873 (21 percent) women in 1997–98—but only 166 were tenured, according to the NAAB data. In the entire nation, there were 117 African American architecture faculty and just 37 were tenured—a drop from five years earlier when there were 126 African American faculty total, and 44 were tenured.

Still, many in our sample disagreed that diversity should be a top priority in schools. Although they, too, would like to see more women and minorities enter the profession, they feared that excellence and talent might be compromised if that goal were too vigorously pursued. "Qualification for the profession of architecture should be a matter of merit only and should not be related in any way to gender or race," said Taha Al-Douri, an intern at Perkins Eastman Architects, PC, in New York City.

Some argued that a richer mix of interests and philosophies should be a more important objective than racial and gender diversity. "In architecture, it would be more interesting to think of diversity in terms of having a good mix of urbanists, modernists, and postmodernists, rather than 'Hispanicists' or 'womanists,' said Joe Sultan, AIA, principal at Gran Sultan Associates in New York City.

A majority felt, however, that the relative lack of gender, racial, and ethnic diversity among students and faculty helps perpetuate a parochialism that places the profession dangerously out of touch with the client pool. "The world is half women and is made up of totally diverse people," said J. Robert Hillier, FAIA, chief executive officer of the Princeton, N.J.-based Hillier Group who also teaches at Princeton University. "Why shouldn't this profession be the same?" ■

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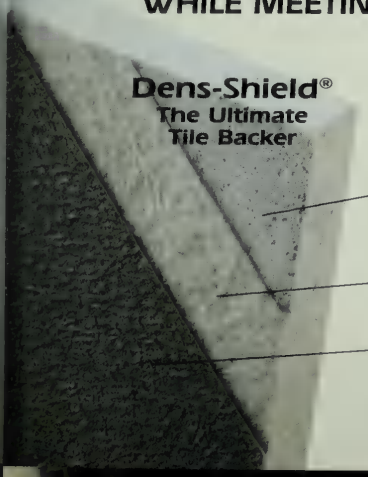

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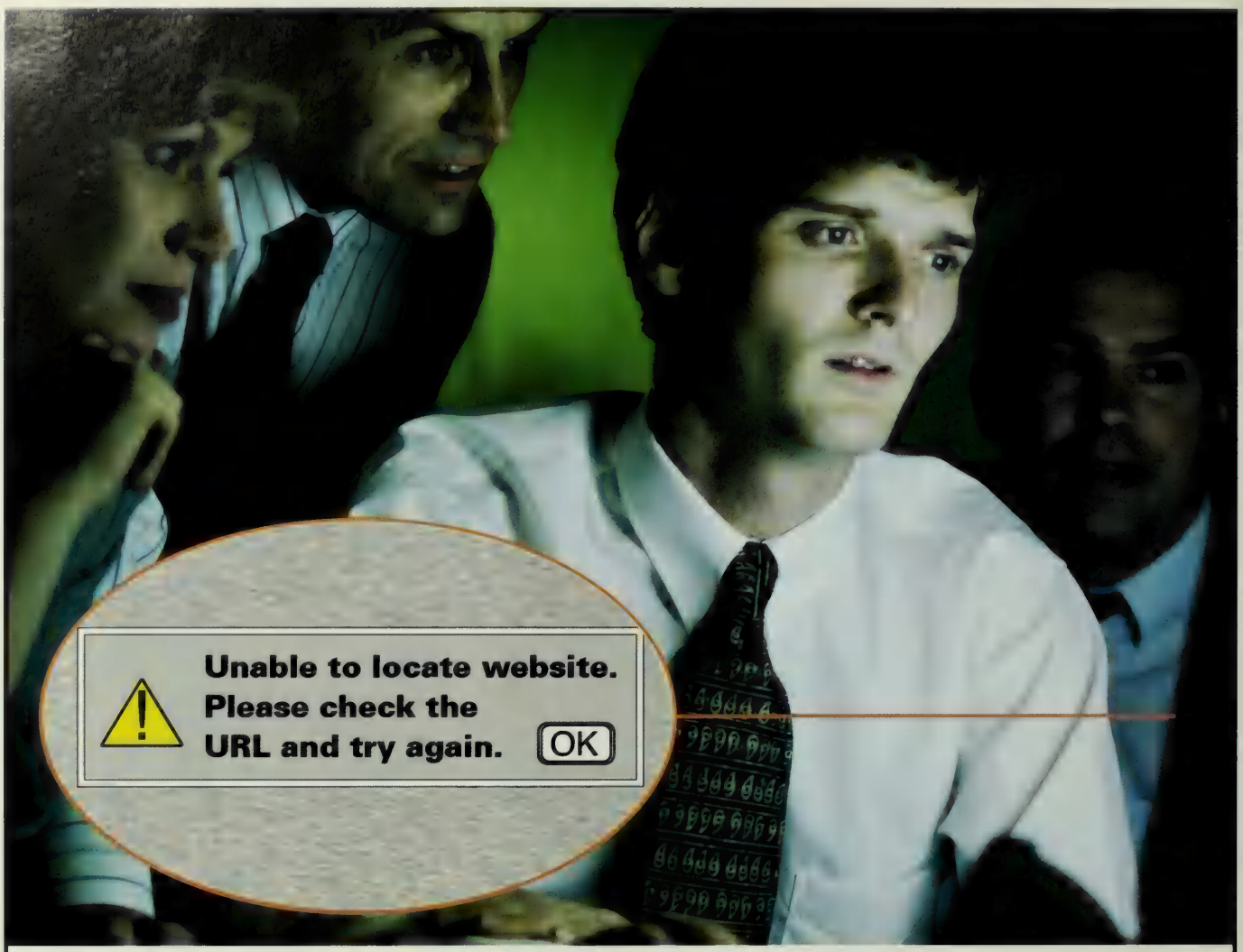

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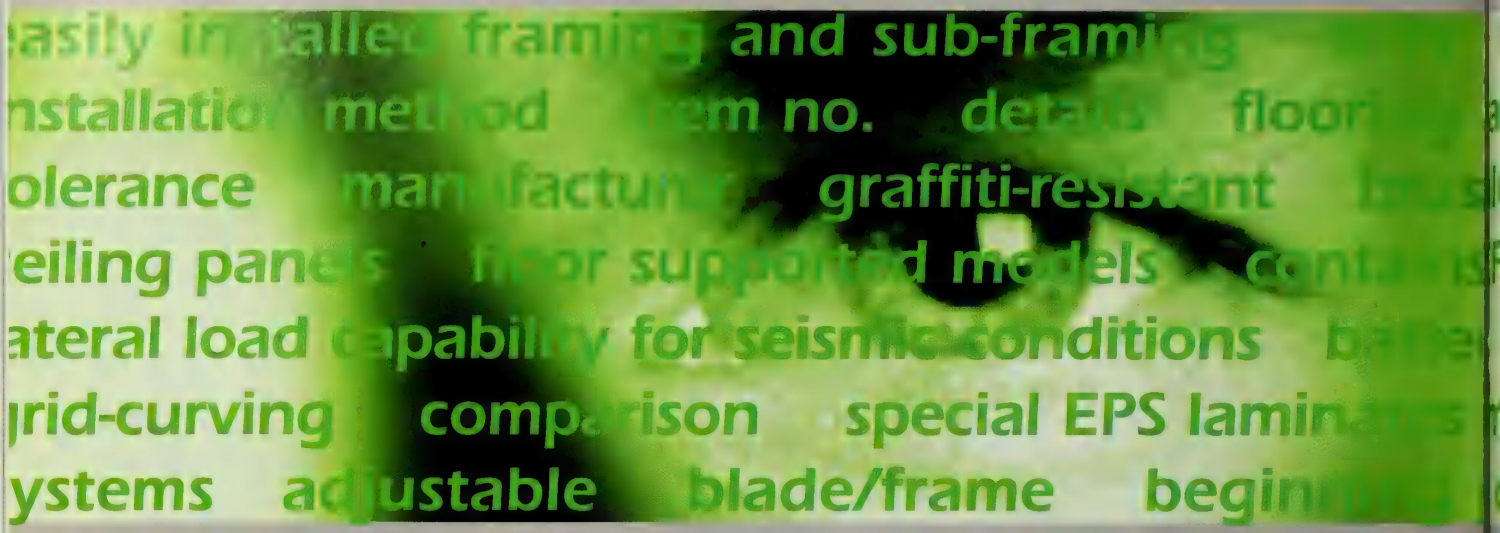

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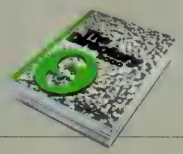
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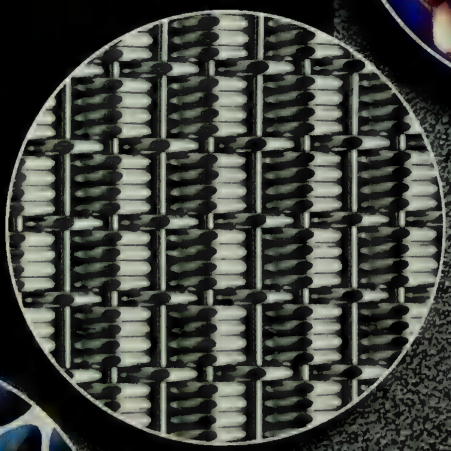

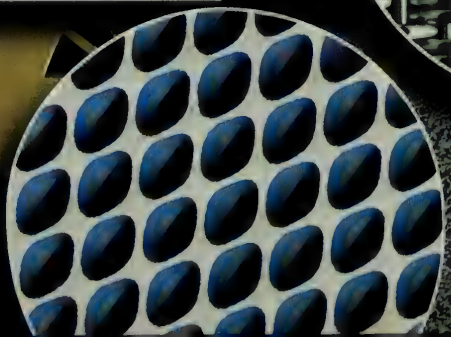

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Record Interiors 1999

Brilliant interior architecture, especially in existing buildings, is an elusive animal. Highly accomplished architects have been known to scoff at interiors work: "breaking carpet, not ground," some implicitly suggest with a sniff. When designing major buildings, architects often leave the interior work to others.

But interior architecture need not be the profession's neglected stepchild: Carving out exceptional indoor realms is a feat requiring as much talent and skill as inspired exteriors. For this issue, we sifted through hundreds of projects, avoiding outright interior decoration—however tasteful or seductive—in favor of truly architectonic interventions. We looked for projects distinguished by qualities of light, spatial sequencing, and formal invention. The resolution of details—the joints, colors, and textures—was as important as the larger compositions and experiential resonance.

Drawing from regions across America and throughout the world, we chose six programmatically and visually diverse projects. This year's Record Interiors *selection begins and ends with contrasting venues for art. Both of these projects—Maya Lin's design for an art collector's New York pied-à-terre and Czech architect Emil Prikryl's gallery in the medieval ramparts of western Bohemia—integrate Modernist sensibilities into semi-underground spaces. But there the similarities end. Whereas the gallery has clean-lined yet dramatically thick-walled and vaulted spaces, the apartment recalls the exquisite lightness of shoji screens and tatami mats.*

Our other projects range from a spectacle-filled Las Vegas restaurant to a futuristic Tokyo boutique, from a literally dazzling Los Angeles nightclub to a tranquil Vancouver airport lounge. While much of the work explores subtle palettes and natural materials—wood, concrete, and stone—some experiments with the surreal qualities of edgy man-made surfaces and vibrant colors.

Despite the differences, each of these architectural works creates a strong sense of place. Crossing the entry thresholds—coming from an apartment building lobby, a boisterous food court, a narrow alleyway, an airport thoroughfare, or an open-air market square—one enters an all-embracing realm: in every case, distinct from the setting left behind.

—Sarah Amelar

The firms featured are:
1. Maya Lin Studio
2. Adam D. Tihany International, Ltd.
3. John Friedman Alice Kimm Architects
4. Rei Kawakubo: Concept and Design
5. Patkau Architects
6. Emil Prikryl, Architect

1

2,3

4,5

6

From the duplex's entrance (on a landing), stairs lead up to the bedrooms and down to the more public spaces.

Within the chaos of New York City, Maya Lin turns the NORTON APARTMENT into a tranquil, Zen-like hideaway.

by Sarah Amelar

With the serene precision of a Japanese puzzle box, architect Maya Lin's Norton Apartment delicately unfolds and reveals itself. Finely crafted, this is a place where panels pivot and glide open to unmask hidden elements, fluidly transforming the compositions of walls and rooms—all without any sense of contraption or mechanical bravura.

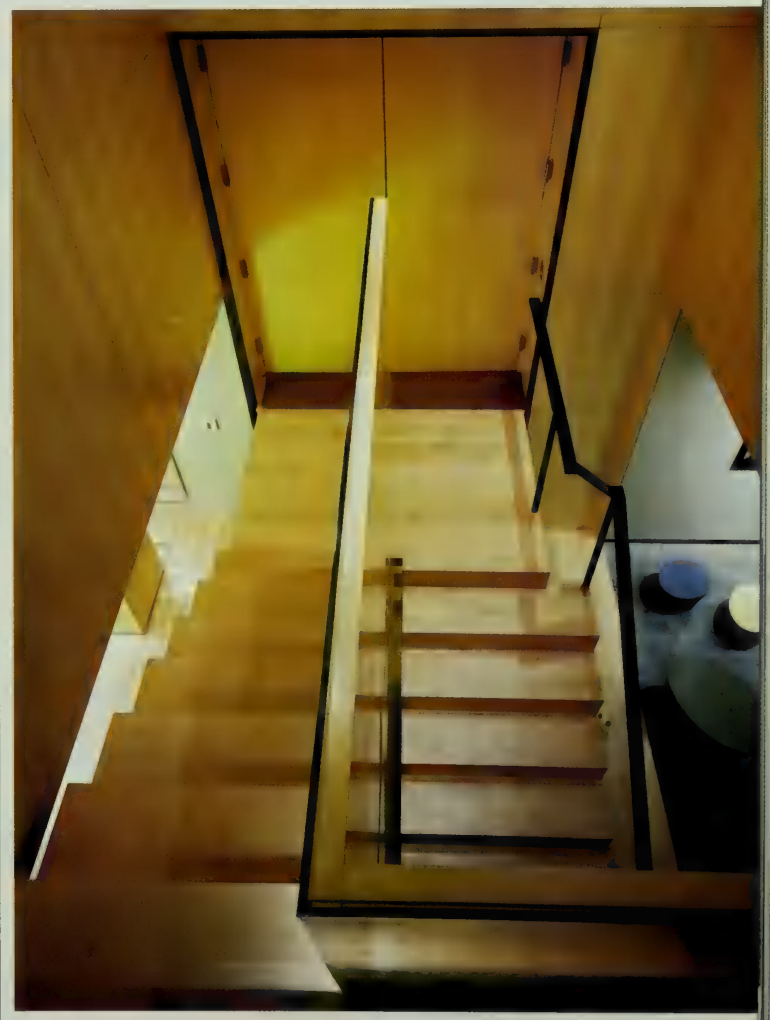
Though the apartment is now an elegantly integrated piece of architecture, Lin—most famous for her design of the Vietnam Veterans Memorial in Washington, D.C.—began with a quirky, if not awkward, space. In fact, she initially questioned its virtues when her friend, software entrepreneur and art collector Peter Norton, approached her to turn the 2,500-square-foot, semi-underground duplex into a pied-à-terre for himself, his wife, and two children. To Lin's eye, the space seemed too small for their needs, and she expressed concern about the lack of views and limited sources of daylight. But Norton maintained he liked those very features, desiring a quiet, introspective home, one small enough to feel intimate even when he was there alone.

"The apartment had its difficulties and challenges," admits Norton, but he also underscores the commission's extraordinary positive features. "In a way," he says, "I wanted to make an ideal project for Maya: no fixed budget, no fixed schedule, no overriding design parameters, and no heavy-fisted client intervention."

Lin's concept for an internally focused, exceptionally flexible space soon emerged. Transcending the limits of square footage, the duplex can readily convert itself—through moving parts—to accommodate the inhabitants of the moment: a couple (with or without two children), a single person, overnight visitors, or cocktail guests.

Working closely with architect David Hotson, Lin's collaborator on such projects as the Museum for African Art, she distilled a tranquil, yet texturally and experientially rich minimalism. Such qualities, typical of Lin's work, are apparent as soon as one steps through the front door—just off the lobby of a five-story apartment building—to arrive on a landing midway between the duplex's two floors. Here, the first view is of two vertical lines: the simple edges of a plate of blackened steel against a

Project: *Norton Apartment*
Client: *Peter and Eileen Norton*
Architect: *Maya Lin Studio*
Associate architect: *David Hotson*
General contractor: *Giovanniti, Inc.*
Consultants: *Friedman Structural Engineering; Renee Cooley Lighting Design*



Atop the duplex's stairs, views span the double entry doors, the partition wall of steel wrapping sycamore, and concrete stools by Lin in the living room.

Seen from the kitchen and dining area, the stair run has an origami quality—as if a single sheet of steel and one of wood were folded together. Beyond the stair, in the living room, Lin's sculpture of shattered glass fills one corner (opposite). The architect also designed the cart on wheels (this page).

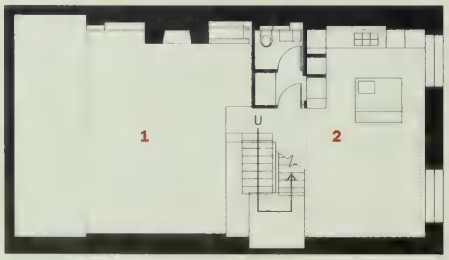
In the kitchen, appliances, such as the refrigerator, oven, and washer with dryer, are concealed behind sycamore panels (above). The simple, unassuming volumes of Lin's custom-designed workstation (above) and sideboard/dining table (left) come apart to reveal chairs that fit like puzzle pieces beneath them.

Sandblasted-glass shower doors occupy multiple positions (left). A sliding panel (above) can convert the bathroom suite into two separate rooms.

Behind the custom freestanding sink, a wooden wall is precisely carved to receive the door handle. Lin's concrete stools stand in the foreground (above).

A pivoting panel in the master bedroom opens just beyond the top stair landing (left). The other bedroom's partition wall and gliding, rotating armoire on a track have many configurations that rely on a custom-made three-pivot hinge (below and opposite).

UPPER LEVEL



LOWER LEVEL → N

1. *Living*
2. *Kitchen/dining*
3. *Master bedroom*
4. *Bedroom*
5. *Skylight*

thin plane of pale-blond sycamore. Forming the stair's central partition wall, these paired layers separate two runs of stairs—one ascending to the private sanctum of bedrooms, and the other, a slightly wider flight, leading down to the public arena for dining, living, and cooking—before bending in unison to become a balcony rail on the upper level. Like a paper fan, the steps almost appear folded from a single sheet of sycamore over steel.

Behind the stairs, diffuse light glows from a floor-to-ceiling volume, whose translucent panels of sandblasted glass, framed in blackened steel, resemble shoji screens. This luminous vertical element (with its skin teasingly veiling bathrooms within) visually links the two floors.

Throughout the space, self-contained forms quietly divulge their kinetic potential. In one of the two bedrooms, a sycamore partition with myriad configurations and an armoire on a track can split the room into two. Similarly, the upstairs bathroom suite becomes a pair of bathrooms. And a study folds into a wall of the master bedroom. In the kitchen, the work island and sideboard can also metamorphose, their apparently solid bases breaking into chairs that fit together like puzzle pieces.

The entire project is remarkably detailed, down to its custom hardware and the consistency of its reveals. Instead of door stops, a perfect imprint of each door handle and lockset is carved into the wood or plaster of the wall behind it. The ubiquitous sycamore veneer was consistently applied in four-inch widths—an unbroken module—and the wood's figure always continues down from one cabinet door to the panel below it. For the stair, 12-foot-long pieces of steel and entire runs, welded off-site, came in through a window. As Hotson recalls, "It was like building a ship in a bottle."

After finessing the spatial details, Lin and Hotson spent six to eight months of this two-year project on the furniture alone. "I'd always wanted to do something like this," says Lin, "architecture that's really a complete whole." ■

Sources

Skylight: *Hope*

Lighting: *Nulux, Litelab, Belfer Litetouch (controls)*

Plumbing: *Kroin (custom), Duravit*

Locksets: *FSB*

Cast-cement stools: *Maya Lin for Knoll Inc.*

Blackened steel, framing sycamore and sandblasted-glass panels, recalls the proportions of tatami mats and shoji screens. The glazed, backlit wall rises the entire height of the duplex. Distinct volumes and reveals between materials are clearly expressed throughout the project.

Patrons entering Aureole (above) cross a bridge in a dramatic 50-by-50-by-50-foot room and catch a glimpse of the glazed wine tower. The restaurant's facade, perforated by 10-foot-deep rose-tinted elliptical windows (right) has a serene presence in a busy foodcourt.

Amid Las Vegas' hype and glitz, Adam Tihany's **AUREOLE** restaurant strives to marry good taste and spectacular feats.

by David Hay

Late one night in early 1998, architect Adam Tihany paced the floor of his Las Vegas hotel room. The architect, responsible for dining establishments such as Le Cirque 2000 and Palladin in New York City, had been asked to submit a restaurant design for what he considered "a dream space."

Unfortunately, the 9,000-square-foot site—which included a dramatic 50-by-50-by-50-foot entry volume—in the soon-to-be-completed 42-story Mandalay Bay Resort did not come unencumbered. Circus Circus Development had already ordered a monumental staircase, which would curve down from the entrance level into the restaurant. Tihany felt that this giant flight of fancy would not only define the space but also add to Las Vegas' "two-dimensional, papier mâché iconography." But when pressed for an alternative, he came up short. His clients kindly gave him a night to think some more.

Mulling anxiously over his initial idea for a sophisticated, contemporary New York-inspired restaurant, Tihany flipped on the television. On came the movie *Mission Impossible*. The 51-year-old architect soon became engrossed in the scene where Tom Cruise, hooked to a cable, works his way around the computer center at CIA headquarters. Suddenly, Tihany sat forward. He had the answer to his design problem.

In place of the staircase, Tihany decided to build a glass-and-steel-framed tower, accessible by a bridge from the restaurant's entrance level. An homage to—rather than a replica of—a New York skyscraper, it would house a renowned wine collection acquired by the restaurant's owners. High-flying aerialists, using cables, would scale the tower (with the agility of Tom Cruise) to retrieve the bottles.

The next morning, Tihany presented this design to Circus Circus' point man, who readily embraced it. The restaurant, called Aureole like its sister establishment in New York, opened last March.

Tihany's design conceit is an abstract, rather than literal, interpretation of Las Vegas' design philosophy. "They always want you to feel you're somewhere else," says the architect. But making an abstraction in Las Vegas was no easy feat, especially given Aureole's setting. The two-story restaurant spans the entry and lower levels of the bronze-windowed Mandalay Bay, whose gaudy casino masquerades as colonial Burma. Here, large caged parrots greet visitors entering the building's marble-floored lobby. Outside, beyond a *Jurassic Park*-style jungle, artificially created, six-foot waves crash onto the imported sand of "Mandalay Beach."

Getting to Aureole means a trip through the heart of this casino: the gaming rooms and a football field-size hall full of slot machines. In a hectic restaurant court, Aureole's white front wall stands apart from the brash eateries around it. On its facade, three rose-tinted halolike windows seem to float. Tihany created these deep sculptural ellipses by projecting circles onto clear cubes. The result is a trio of shimmering aureoles.

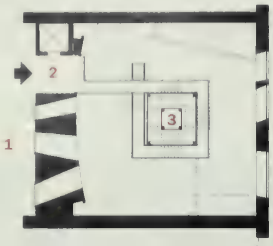
Diners walk through a relatively simple doorway and cross a bridge to Tihany's opening scene—the wine tower—before catching their first glimpse of the 9,000 bottles within. (Five humidifiers and an equal number of air conditioners assure a constant 70 percent humidity level and 55-degree cellar temperature.) Winding around the 42-foot tower, the stairs allow for close views of the "wine angels." Attached by rappelling clamps to electrically powered cables, the aerialists are hoisted up the tower, where they retrieve bottles and slip them into wine holsters for the journey back to earth.

HOISTED UP THE 42-FOOT TOWER, AERIALISTS RETRIEVE THE WINE.

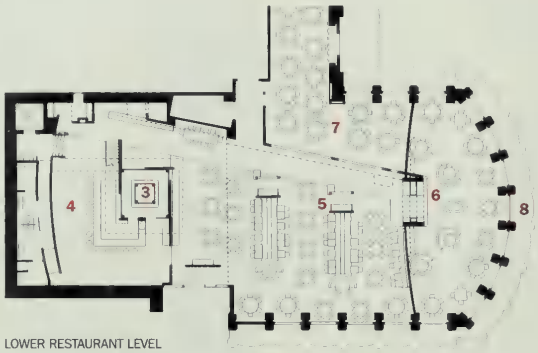
The stairs lead to the bar and lounge. With cream-colored limestone floors and its walls partly faced in deep brown Italian suede, the space feels surprisingly calm. Dark walnut paneling on the small bar, side tables, and maitre'd's desk reflect Tihany's desire to make this area "more masculine and somber."

David Hay, a Los Angeles-based writer, has covered architecture and the arts for The New York Times, Los Angeles Times, House Beautiful, Preservation, *and many other publications.*

Project: *Aureole at Mandalay Bay*
Client: *Circus Circus Development*
Architect: *Adam D. Tihany International, Ltd.—Adam D. Tihany, principal-in-charge; Brannen L. Brock, designer/project manager; Martin Vahtra, designer*
Architect of record: *Klai Juba Architects*
Consultants: *JBA Engineers(mechanical and electrical), Lochsa Engineering (structural), Thomas Thompson Lighting Design (lighting), Bee Engineering (hoisting and rigging equipment), Sierra Glass & Mirror (glazing and doors)*



UPPER LEVEL/CASINO



LOWER RESTAURANT LEVEL

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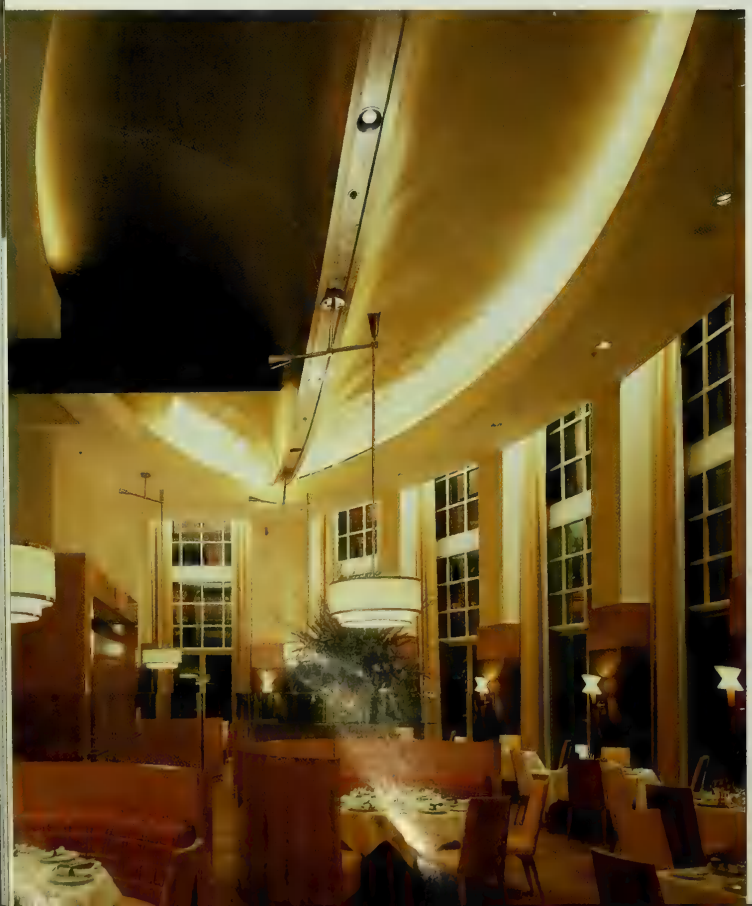
Trained aerialists, using electrical hoisting cables, ascend the wine tower's interior (right) to retrieve bottles. The wine and the aerial spectacle are visible from the bar and lounge (opposite). A gold-leafed boat form hovers above the Swan Court (below left).

1. *Casino*
2. *Entry*
3. *Wine tower*
4. *Bar and lounge*
5. *Main dining*
6. *Swan Court*
7. *Private party room*
8. *Terrace*



Continuing around the tower's base and into the 180-seat restaurant, the design changes gears. Following the "wow" of the entry sequence, the architect wanted to give diners a "pretty and seductive" eating area. To achieve this intimacy, the main dining room has a lower ceiling and four light boxes that emit soft, diffuse light. The room is divided into three areas, separated by sycamore-paneled, glass-topped banquettes. The pale-blond imported wood further sets this room apart from the wine tower's pyrotechnics.

Still, Tihany's work was not done. With a renowned chef in the kitchen, Aureole's owners really wanted to pull in the high rollers. When the truly moneyed make their way beyond the main dining room, they continue through a doorway, framed by water falling between two sheets

WITH AUREOLE, TIHANY SET OUT TO OVERTURN A LOCAL CLICHE.

of glass: the haplessly named "water gate." The VIP guests have arrived at Swan Court, a semioval room with French doors, opening to an outdoor pond and waterfall. This quieter room rises to an extraordinary ceiling, centered around an ethereal, gold-leafed ellipse that recalls a boat's hull.

At this point, Tihany's allusive forms—the aureoles, the boat hull, and even the wine tower—become so numerous and varied that the New York metaphor begins to break down, and it seems hard to imagine being anywhere but Las Vegas. The architect walked a fine line: recognizing the need for spectacle, he also sought a quality of subtle detail unheard of in this town. Turning a local cliche on its head, Tihany set out to create "something which has some depth to it, and thus would last." With Aureole, Las Vegas may just be ready for such a challenge. ■

Sources

Paint: *Benjamin Moore*

Hardware: *Custom by Adam D. Tihany, fabricated by Valli & Valli*

Stone and tile: *Western Tile and Marble*

Lighting: *Custom by Adam D. Tihany, fabricated by T.A. Greene*

A polycarbonate wall separating the dance floor from the tunnel to the restrooms (this page) and a steel-coil curtain that closes off the bar area (opposite) seem to float below the old roof trusses.

At the hot new CLUB SUGAR in Santa Monica, John Friedman and Alice Kimm choreograph a dance for scrims, screens, lights, and bodies.

by Clifford A. Pearson

"Clubs are all about seeing and being seen," says John Friedman, AIA, during a nighttime jag at Club Sugar, the Santa Monica, Calif., nightclub he designed with his partner, Alice Kimm, AIA. "So we used a lot of new plastics with contradictory qualities of transparency and reflectivity," adds Kimm. Aware of the importance of anticipation and distortion in the late-night scene, the architects created a place that encourages views through screens, scrims, translucent panels, and colored surfaces. Even the sharks and eels in a 17-foot-long aquarium see the world through water backlit by purple neon.

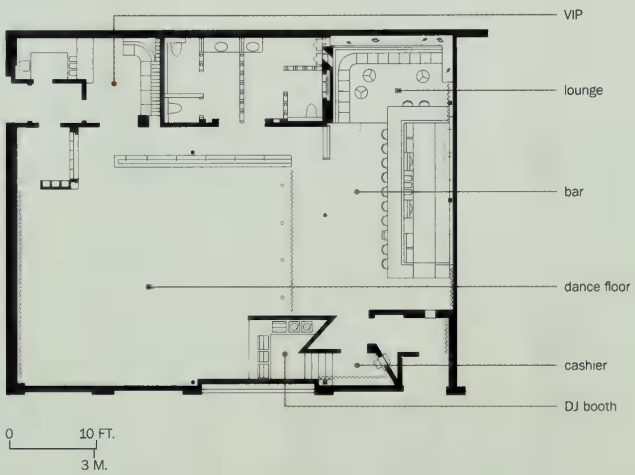
Set in an industrial building that was reincarnated as a reggae club a few years ago, the 3,000-square-foot Sugar combines slick new materials with the exposed brick and old wood joists of the existing structure. Juxtaposing modern and vintage, cool and warm, was a key strategy of Friedman and Kimm. To accentuate the contrast, the architects inserted elements such as partitions and screens below an 8-foot-6 inch datum line, above which the original roof structure appears. "The idea," says Friedman, "was to have the new and the old just kiss."

Featured elements—the black epoxy-covered concrete floor, the zinc-clad entry wall, and the bar of honeycomb acrylic panels beneath a clear two-inch-thick acrylic counter—have a cool manner that is very much of the moment. But a few softer, warmer touches also make themselves felt: chic upholstery on a curving banquette and plush drapes covering much of the wall behind the bar, for example. The sense of opposites attracting in the realm of architecture, asserts Kimm, reflects the human dance being played out in the club.

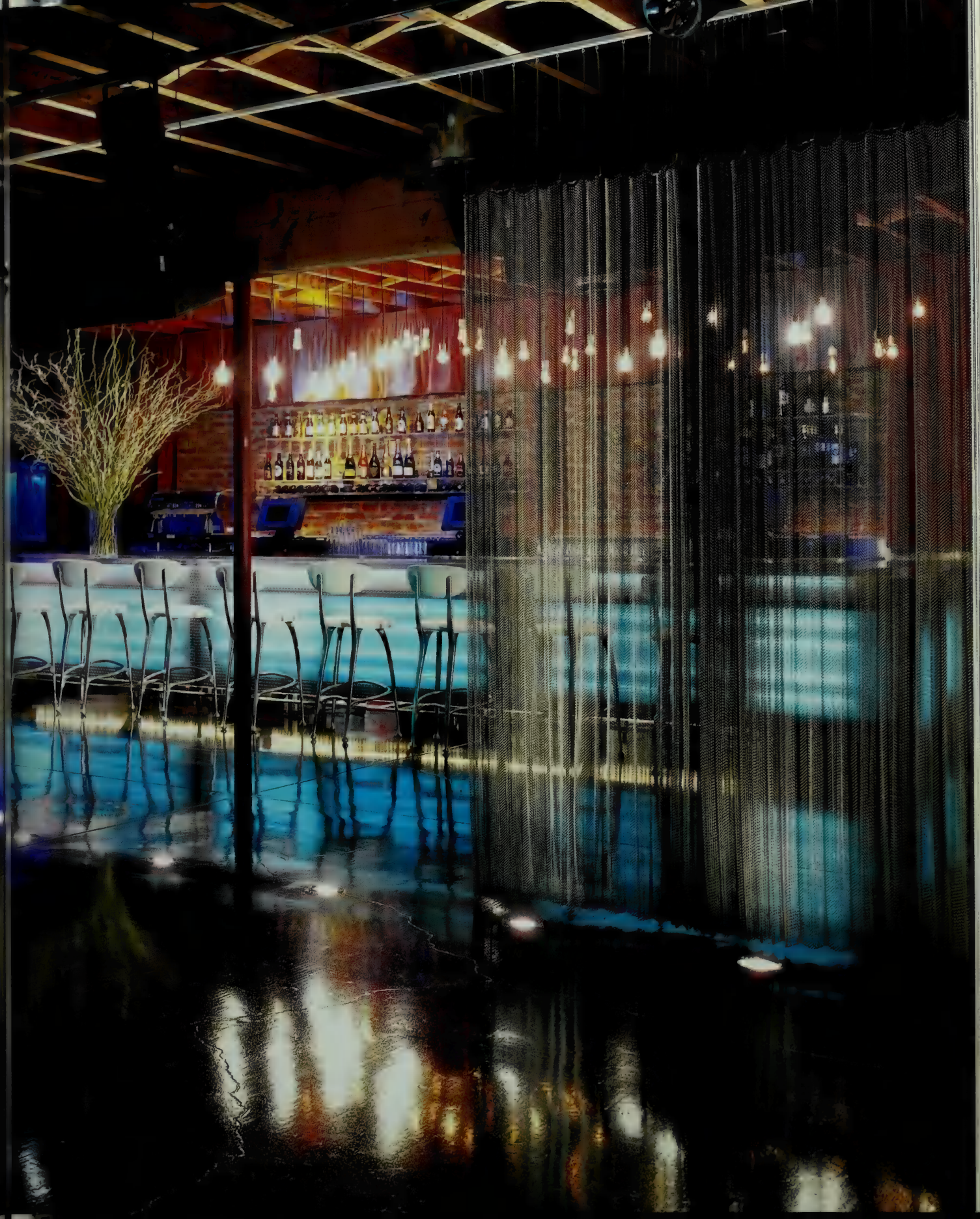
"THE IDEA WAS TO HAVE THE NEW AND THE OLD JUST KISS," SAYS FRIEDMAN.

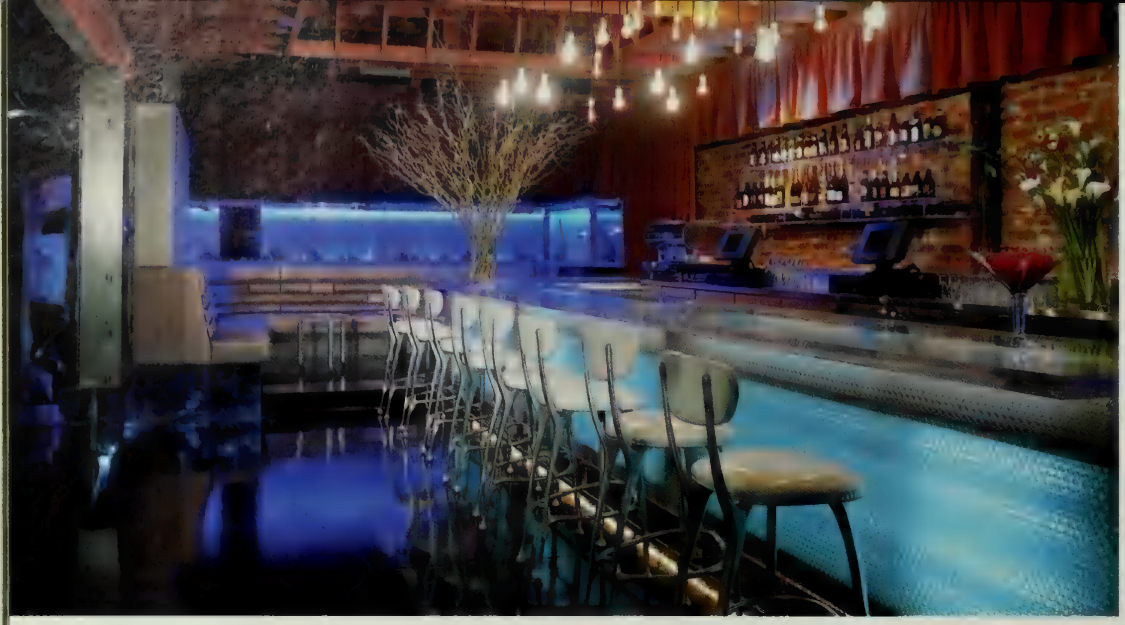
The client, David Reiss, participated in the design process but never had a particular look in mind. As he says, "I wanted a place that people would talk about and remember."

"David has an adventurous spirit," explains Friedman. "He hired us even though we had never done a nightclub, and he really enjoyed exploring new ideas." Much of that exploration dealt with finding the right materials, modern ones that would be easy to maintain. Although he owns a hot restaurant, Red, and is himself a fixture in L.A.'s late-night scene, Reiss had never owned a club before Sugar.

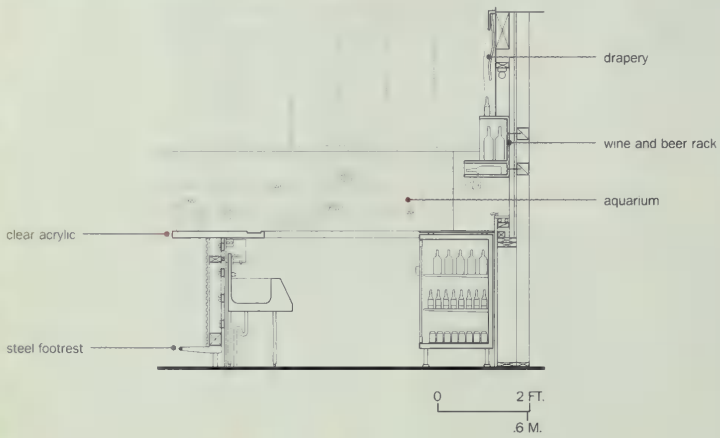


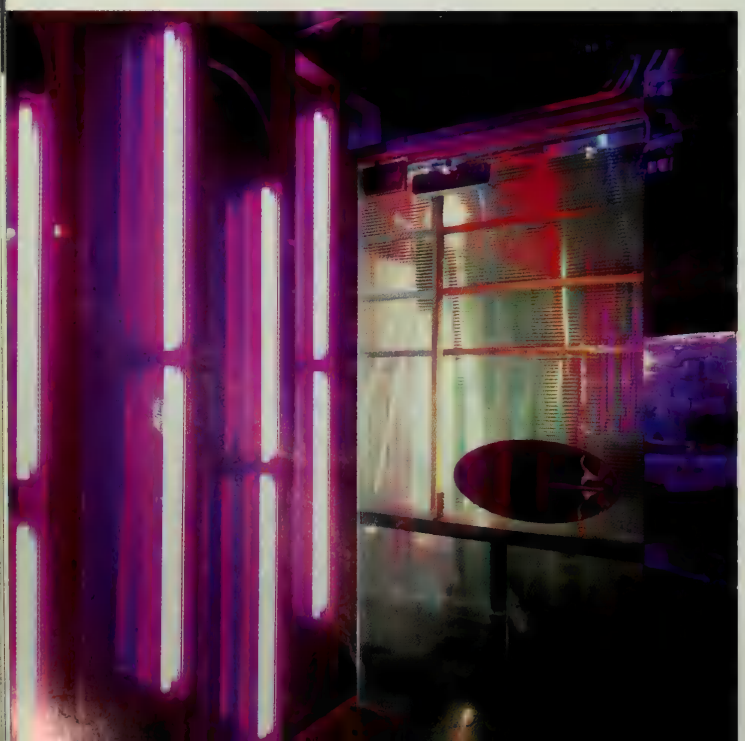
The architects stripped the 3,000-square-foot space to its structural shell, poured a new concrete floor and covered it with black epoxy, then divided the club with a series of partitions that offer distorted glimpses of what's happening in other parts of the joint. Dancers can sit on the bench-size steel channel at the base of the wall between the dance floor and restrooms (left in photo).





Acrylic abounds in the honeycomb sheeting over the bar front (left) and the two-inch-thick clear slab above it. Restroom doors are also clear acrylic (below), offering views to the lavatories.





To create a sense of intimacy on slow nights when most people are sitting down, Reiss asked the architects to find a way to close off the bar area from the dance floor. Friedman and Kimm's solution was a curtain of stainless-steel coils that offers a sense of enclosure without completely blocking views through the club. On busy nights, the curtain opens as bodies fill the dance floor.

Separating the dance space from the corridor to the restrooms—called the "tunnel"—is a different kind of partition, one of ribbed polycarbonate rising above an 18-inch-wide steel channel that doubles as a bench for tired dancers. The translucent quality of the polycarbonate brings cloudy images of dancing bodies into the tunnel while providing a sound buffer between the two parts of the club.

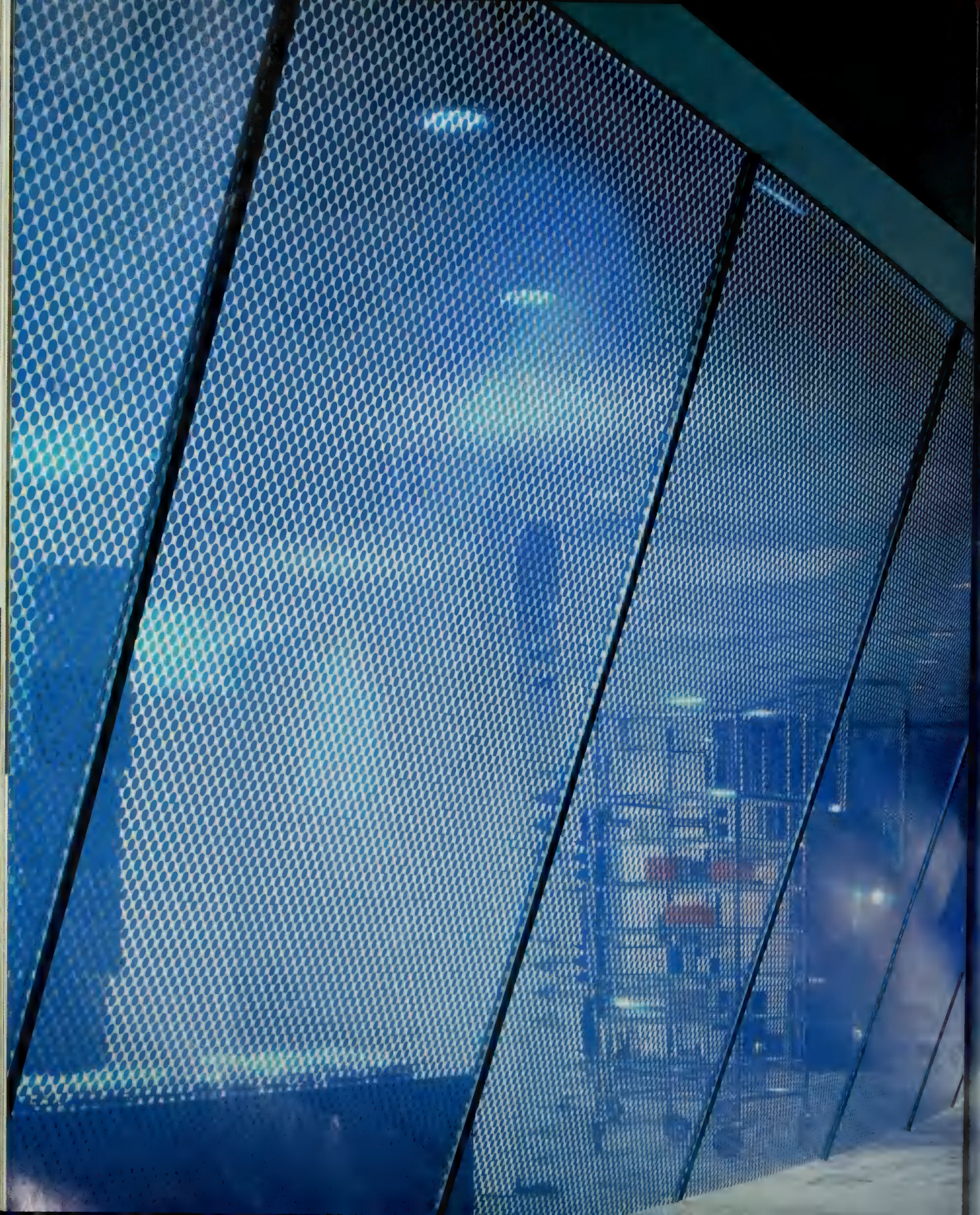
From the beginning, Reiss told Friedman and Kimm that the restrooms would be critical to the success of the project. In today's club world, restrooms are signature spaces. At Sugar they tease, first with clear acrylic doors offering views to the lavatories and then with colored lights that recall a peep show. Walls and ceilings in the restrooms are colored acrylic panels backlit by staggered fluorescent strips, so visitors are enveloped in garish but hip colors—fuchsia for the girls, aqua for the boys. The wash counter for the two restrooms is one long piece of acrylic that penetrates the dividing wall through an opening just large enough to offer a peek to the other side (if you bend down and turn your head). Guys standing at the urinals get an extra treat: a view through a two-way mirror to the aquarium and raised seating area near the bar.

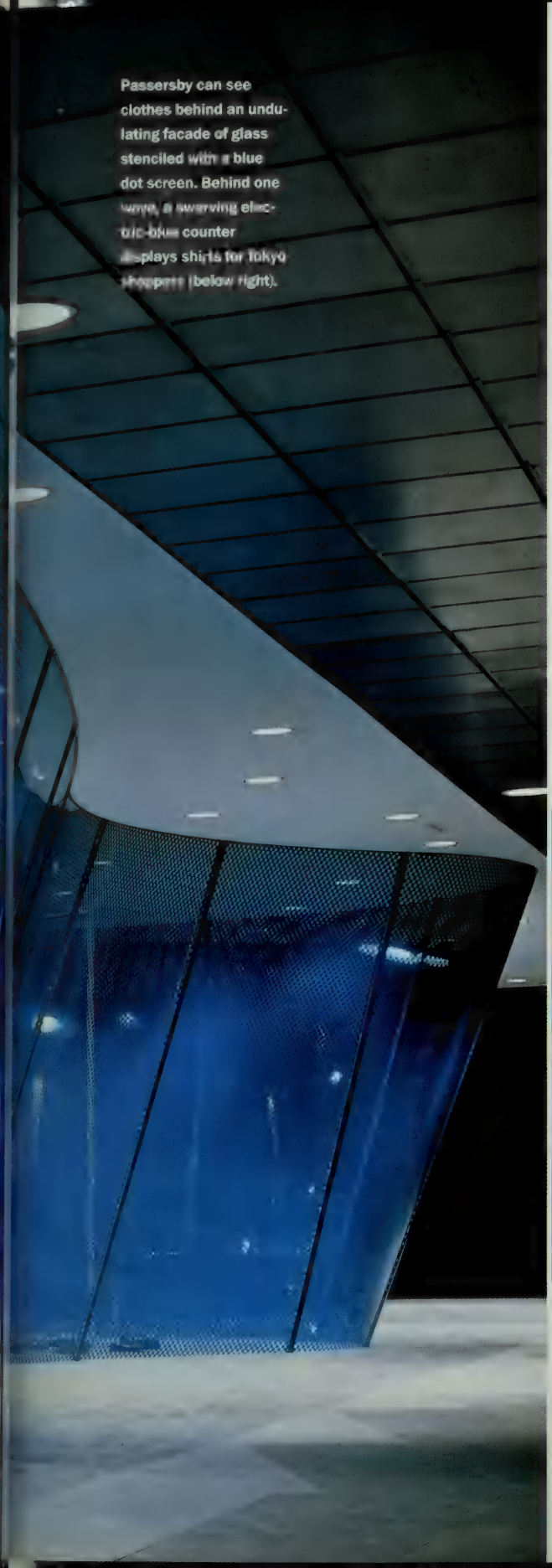
Sugar is still a work-in-progress. A VIP room in the back and the facade await more work. But since the architects designed the place as a combination of rough and slick, it easily accommodates such unfinished business. Dressed in all the latest materials and colors, Sugar has enough attitude to attract the fickle after-hours clubhopper. Yet it knows when to wink with the right offbeat touch so no one takes it too seriously. ■

Project: *Club Sugar, Santa Monica, Calif.*
Architect: *John Friedman Alice Kimm Architects—John Friedman, AIA, Alice Kimm, AIA, principals; Nina Lesser, Dan Brunn, Felix Cheng, Joe Fleischer, Marlin Watson, Chris Samuelian*
Engineer: *William K. Koh & Associates*
Consultant: *Fire Ltd. (lighting)*

Sources
Honeycomb plastic sheeting: *Norfield*
Polycarbonate sheeting: *Polygal*
Stainless-steel curtain: *Cascade Coil*

Backlit walls and ceilings of colored acrylic envelop restroom visitors in a warm electric glow. The standard four-by-eight-foot panels can be easily replaced if damaged.





Passersby can see clothes behind an undulating facade of glass stenciled with a blue dot screen. Behind one wave, a swerving electric-blue counter displays shirts for Tokyo shoppers (below right).

A futuristic COMME DES GARCONS store in Tokyo beckons shoppers down its meandering paths.

by Soren Larson

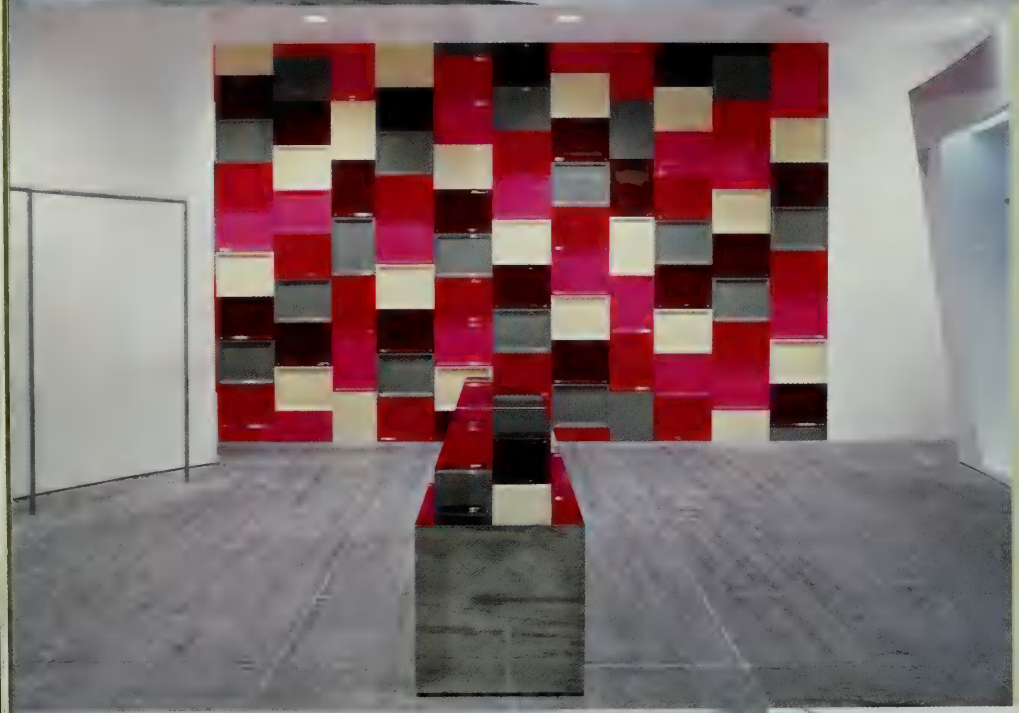
Comme des Garcons is anything but predictable. In March, a month before opening its revamped Tokyo boutique, the fashion house unveiled a new store in New York City whose entrance implies inscrutability and exclusivity. The doorway is silent, a small opening in an old brick facade under a sign that still announces the previous owner: the Heavenly Body Works auto repair shop. Considering Comme des Garcons' avant-garde reputation, the presentation seems to say, "If you aren't in the know, then don't even bother."

But this isn't the case with the remodeled Tokyo store, which was designed, as were the firm's other boutiques, by company founder and lead creative force Rei Kawakubo. The front facade—at the ground level of an office building in the chic Aoyama district—is a glowing, transparent beacon, constructed of space-age, undulating glass walls stenciled with a blue dot screen. Passersby can see through the electric-blue bubble to the shirts and ready-to-wear areas, which occupy the two bulging forms on either side of the front door. "Each store will have its own particular feeling, its own character," says Kawakubo. "In New York, we found the existing facade interesting to keep. In Tokyo, we [updated] a location to make it stronger, completely changing the facade as well as entirely renovating the interior."

The new facade was designed by London's Future Systems, which collaborated with Comme des Garcons on previous efforts, including the new New York boutique. But the interior of the rectangular, 7,500-square-foot Tokyo store, which reopened in April, is all Kawakubo: her unorthodox fashion sense and notions of private creativity permeate the overall layout, as well as the ambiance of each of the various spaces.

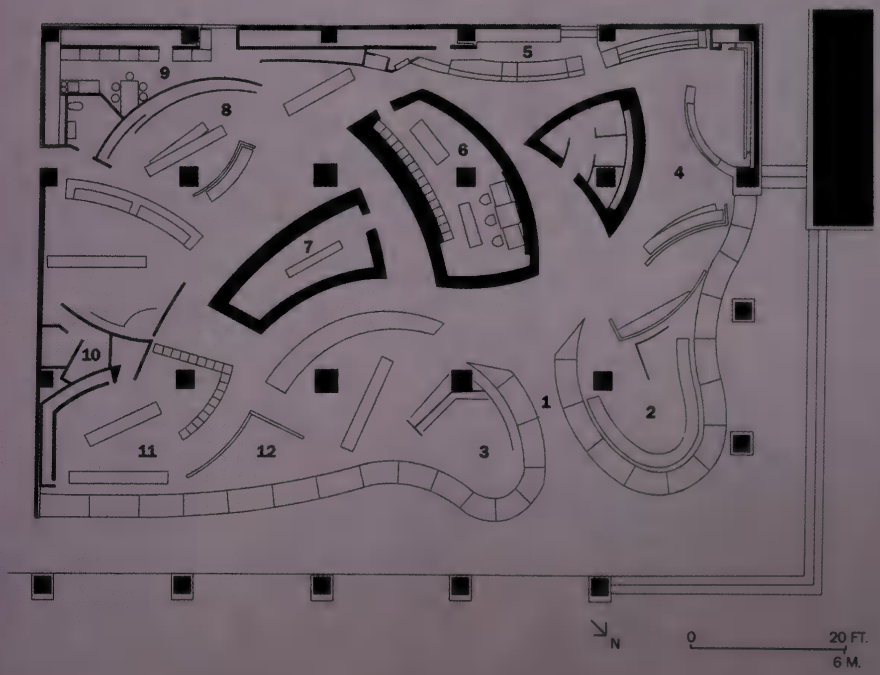
This turns out to be no easy-to-digest chain store. Though some shelves and clothes are visible from outside, on the inside, privacy

PHOTOGRAPHY: © MASAYUKI HAYASHI



Varied wall treatment distinguishes individual merchandise areas. For instance, artist Christian Astuguevieille was commissioned to create one installation (bottom right), while artist Sophie Smallhorn was tapped to design another (top left). Some of the thick, curving forms (opposite page) contain storage spaces for stock.

1. *Front entrance*
2. *Shirts*
3. *Comme/Comme collection*
4. *Comme des Garcons collection*
5. *Cashier*
6. *Stock and office*
7. *Stock*
8. *Homme Deux*
9. *Staff*
10. *Changing rooms*
11. *Homme Plus*
12. *Fragrances*



is paramount. Upon passing the threshold, the first space visitors enter is bare of merchandise. The walls and ceiling are simple, clean and white, while the floor is sand-blasted granite. Customers choose which pathway to follow, and then meander into the inner, hidden merchandise areas. "This leads the customer on the voyage of discovery," explains Kawakubo. "The store focuses on movement and exploration. One has to dare to wander around to discover all the products and different spaces."

The walkways pass between a succession of curved walls—mostly made of aluminum plates rolled with glossy white enamel paint—behind which Kawakubo placed some of the product stock and office areas. Intermittently, the passageways widen to introduce a new environment (the store sells six Comme des Garcons clothing brands, plus accessories and fragrances). While the floors and walls remain similar throughout the boutique, each individual merchandise area is distinguished by a unique wall hanging, painting, or installation. One space contains shelves full of urns created by artist Christian Astuguevieille, while another area houses artist Sophie Smallhorn's bright wall of horizontal stripes fashioned from medium-density fiberboard and acrylic paint. Other walls display an array of patterns, colors,

THE CUSTOMER IS LED ON A VOYAGE OF EXPLORATION AND DISCOVERY.

and textures developed by Kawakubo. The booths that hold the merchandise are high-gloss baked-finish steel, while the bulk of the fixtures—custom manufactured by the contractor, Ishimaru K.K.—are built of polished stainless pipes or stainless mirror glass and plate glass.

Though artists were involved in the creation of the inner chambers, Kawakubo downplays the artistic side: "The various colored walls are not in any way to be regarded as art but as a structural part of the architecture. I simply felt like creating different types of wall in color and texture to create a strong and interesting difference between spaces."

As in the interior of the New York store, the concept, says Kawakubo, is of a "more concentrated, superficially unaccommodating space which expresses the pure will of the designer, where the customer can enjoy a private comfortable feeling and experience a sense of discovery." This new approach is a far cry from the Comme des Garcons style when its first stores were going up around 20 years ago. Those structures, Kawakubo has noted, were simple and boxy; the entire look of Comme des Garcons was expressed in one gesture, in a strong and minimalist environment.

The complexities and hidden qualities Kawakubo now creates make for a more personal and surprising shopping experience. But in her typical fashion, she has no intention of sticking with the current approach. "We wanted to make something totally new that looks toward the future," she says. "The underlying concept is to constantly search for the new and not yet existing, to break down barriers and dispense with preconceived notions, and to try to push forward and look into the future using the power of creativity." ■

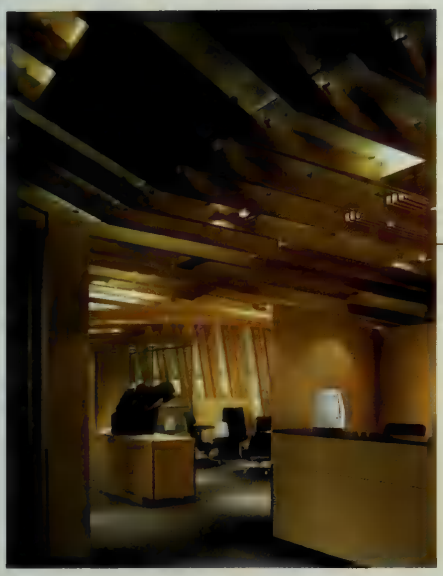
Project: *Remodeling of Tokyo Comme des Garcons flagship store*
Architect: *Rei Kawakubo (concept and design); Takao Kawasaki (interior designer); Future Systems (facade)*
General Contractor: *Ishimaru K.K.*
Interior art direction: *Christian Astuguevieille and Sophie Smallhorn*

Sources
Glass and stainless-steel facades, fixtures, steel booths and furniture: *Ishimaru K.K.*
Lighting: *Iwasaki*

Narrow passageways lead visitors into unexpected spaces (left), including one of the ready-to-wear areas (below).

Air Canada's lounge gives arriving business-class travelers, mostly from Asian cities, a place to rest, freshen up, and retrieve messages.

Evoking the Pacific Northwest, Patkau Architects' ARRIVALS LOUNGE ministers to the jet-lagged frequent flyer.



An unprepossessing corridor from the arrivals area offers little preparation for the lounge experience—womblike, evocative, yet recognizably specific to the Pacific Northwest (left).

by James S. Russell, AIA

It's a commonplace paradox that the farther and faster we go, the more places look the same. Exhibit A: the airline passenger terminal. If it's Tuesday, wonders the harried frequent flier, is this acreage of metal, glass, suspended ceiling, and moving walkways Dubai? Or Dubuque?

One airline has struck a blow for the particularity of place. Air Canada asked how it might make the experience memorable for valued but jet-lagged trans-Pacific customers arriving in Vancouver. Airline management decided to create a unique arrivals lounge that travelers would associate with Air Canada and the character of the Pacific Northwest. "The trick was to determine what is local," explains Ralph Orr, the airline's manager of facilities design. It would have been easy to scatter some soft couches with the velour du jour across tranquilizingly patterned wall-to-wall, then slap on some familiar images: mountains, sea gulls, fishing boats, or totem poles. But Orr was looking for "something more substantial, in which the intrinsic design would be more powerful."

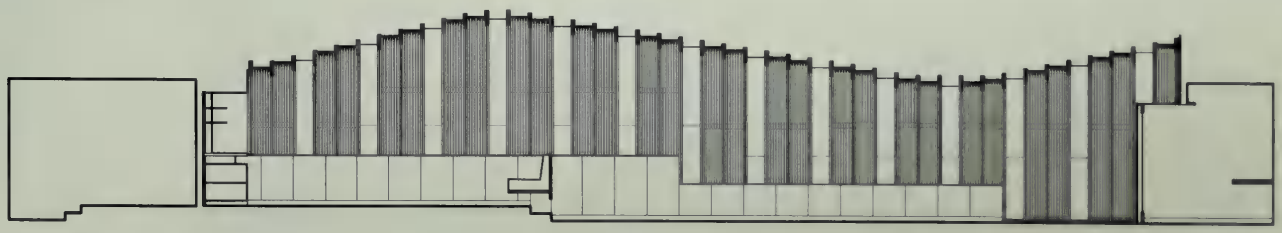
He chose Patkau Architects, a Vancouver firm, headed by John and Patricia Patkau, with a reputation for skillfully molding architecture that responds to clients' needs, as well as the Pacific Northwest's spectacular landscapes [May 1996, page 40]. The lounge's site, a characterless, drywall-clad rectangular space deep inside the terminal, offered no apparent poetic possibilities—not even an exterior wall in which to punch a window.

The lack of character offered a challenge that actually appealed to the architects. Above a suspended ceiling they found a 10-foot-high plenum only partly occupied by a tangle of pipes, wiring, ductwork, and luggage conveyors. Within this space, they formed a self-supporting wall-and-ceiling system of maple ribs, which fan up and down, around the mechanicals, becoming a gently undulating enclosure. Between the ribs, metal clips support backlit patterned-glass panels.

Abstract, even womblike, the cabinet-quality construction is rich with Pacific Northwest associations: traditional Asian tea-houses, native tribal longhouses, and wooden ship hulls. Native art, borrowed on a rotating basis from the city's Museum of Anthropology, makes the local connection even more obvious. Was the airline management concerned the lounge wouldn't offer the standard trappings of hospitality design? "I wondered if the average customer could identify with this," admits Orr. But judging by the guest logs that he regularly reviews, he needn't have worried. The bottom line, he says, is "people find it unbelievable." ■

"THE TRICK WAS TO DETERMINE WHAT IS LOCAL," SAYS RALPH ORR.

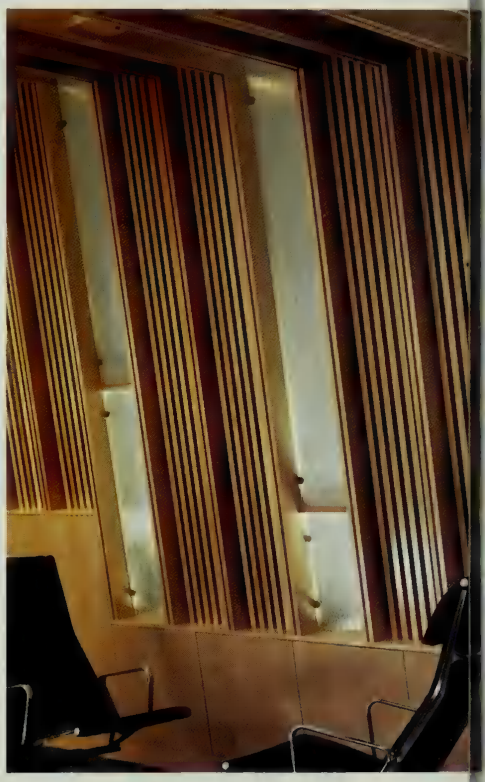
Project: *Air Canada Arrivals Lounge, Vancouver, British Columbia*
Architect: *Patkau Architects—Timothy Newton, John Patkau, Patricia Patkau, David Shone (design team)*
Engineer: *Mew Consultants (mechanical, electrical, lighting)*
Contractor: *Heron Construction*

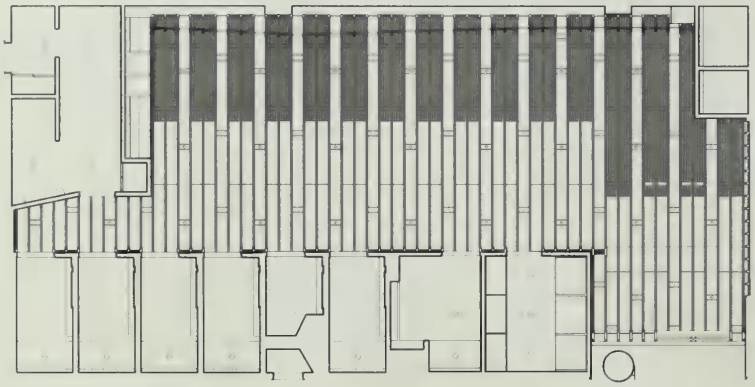


EAST ELEVATION

FLOOR PLAN

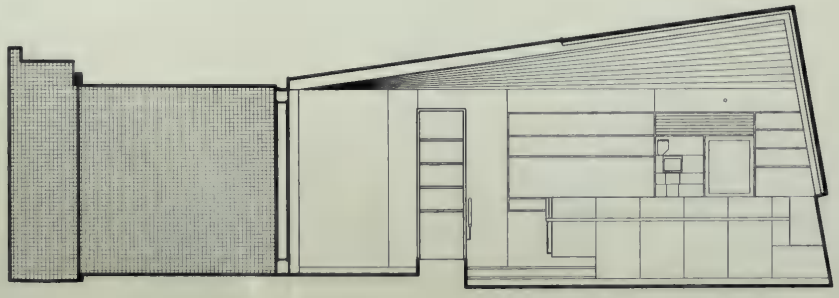
1. *Reception*
2. *Business center*
3. *Lounge*
4. *Breakfast area*
5. *Kitchen*
6. *Shower*
7. *Washroom*
8. *Luggage*





REFLECTED CEILING PLAN

SOUTH ELEVATION



NORTH ELEVATION

Sources

Hardware: *Schlage, Stanley, Soss, LCN, CBH, Forms + Surfaces*
Resilient flooring: *Armstrong*
Carpet: *Fortune Contract*
Chairs: *Herman Miller, Fritz Hansen*
Lighting: *Juno, Danante, Lithonia, Sistemalux*
Lighting controls: *Lutron, Leviton*

The indirect incandescent lighting, calibrated to evoke daylight, glows through laminated, patterned glass, animating the architects' system of maple ribs and battens (over air outlets and sound-absorption material, as needed). A preset dimming system constantly varies the lighting as if clouds were passing overhead.

New round skylights and geometrically reconfigured windows illuminate the entrance hall (this page). Outside, an allée of standard telephone poles (opposite) announces the front entrance.

A baroque brewery is reincarnated as the BENEDIKT REJT GALLERY in Bohemia.

by S. A. Miller

The Benedikt Rejt Gallery rises within the medieval ramparts of Louny, a small city near Prague. Entered from a market square near the edge of town, the structure descends three stories along a steep embankment on the Ohre River. "Like many Czech buildings, it was built and rebuilt over so many years," observes the gallery's most recent architect, Emil Prikryl, "that it's sometimes hard to say just what's 'original'."

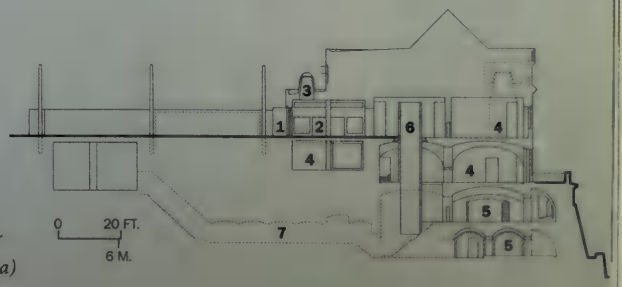
Indeed the building's provenance is hardly well established. Possibly in the 17th century, a baroque brewery was erected on the site. But its beer-making eventually became obsolete, and a new plant elsewhere in Louny had replaced the so-called Old Brewery by the outset of World War II. During wartime occupation, the Germans deemed the brewery's medieval fortifications advantageous and altered the building—demolishing large above-grade sections while expanding the lower vaulted levels.

By the 1950s, the old brewery began its exceedingly gradual rebirth as a place for art. In 1965, after vaguely exploring possibilities for donating the building to Louny's art museum, the Czech government designated it an exhibition space independent of the museum. The gallery's first director envisioned devoting it to Czech Constructivist art, but scarce funds reduced the work to stops and starts. During this period, the building's dilapidated market-square facades were partially stripped down and the pitched roof raised to accommodate a new attic.

Following Czechoslovakia's Velvet Revolution in 1989 and the subsequent change in power, the gallery's new curator, Alice Stefancikova,

S.A. Miller is a freelance writer, specializing in architecture and design.

1. *Entrance (plaza level)*
2. *Reception hall*
3. *New skylight*
4. *Gallery*
5. *Future gallery*
6. *Elevator shaft*
7. *Tunnel to bunker (World War II era)*

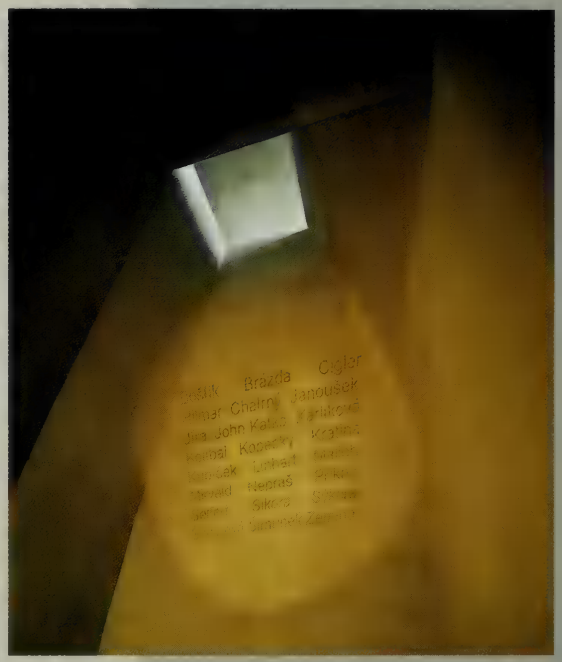


PHOTOGRAPHY: © JAN MALY

One level below the gallery's entrance, sculptures occupy a mysterious, cryptlike vaulted space. The elevator shaft appears (this page) as a simple concrete vertical element. With the lower floors set against an embankment, their windows puncture only the wall facing the river. The ramp (opposite) leads a few feet down to an ancillary exhibition space.

With an economy of means, the stair rail is a simple steel rod (left), while ordinary radiators, turned sideways, become sculptural (opposite, below left). Existing openings were made circular (left and below). Black steel insets in the concrete floor cover electrical conduits (opposite top and below center). In the reception hall, an elegant cast-concrete form with a retractable faucet (opposite, below right) provides a counter for gallery openings.

Prikryl streamlined existing geometries, remaking stairs and simplifying openings (left). At a gallery opening, artists' names were projected on a wall (below).



secured a minimal government grant to create a showplace primarily for art of the 1960s and later—work that the Communist regime had largely discouraged. She engaged Emil Prikryl, head of the Prague Academy of Art's school of architecture, to take up the architectural baton. Actual construction did not begin for three years, not until 1995.

With a small work crew and a breathtakingly tight budget, Prikryl proceeded with ingenuity. In a Modernist vein, he cleaned up the lines of the facade and created a sense of place outside it with an allée of ordinary 18-foot-tall telephone poles, bold signage from painted scrap metal, and what he describes as the "absolute cheapest" wood decking.

Given the building's introspective, cryptlike qualities, Prikryl's work focused largely on the interiors, where he opened up spacious rectangular galleries, as well as several small, ancillary exhibition rooms, based on quirky existing configurations (including one with a star-shaped plan). So far, the architect has fully renovated 8,000 square feet, comprising only the entry level and one floor below it.

Low-cost, often industrial-grade finishes and products—applied with a startlingly simple elegance—inform the spaces. Waxed poured-concrete floors extend throughout, except in the entry hall, which is paved in terrazzo. Plaster, tinted with gray mineral pigments, lines the walls. In the galleries, standard, black steel radiators, mounted on end like vertical sculptures, have a surprisingly totemic presence.

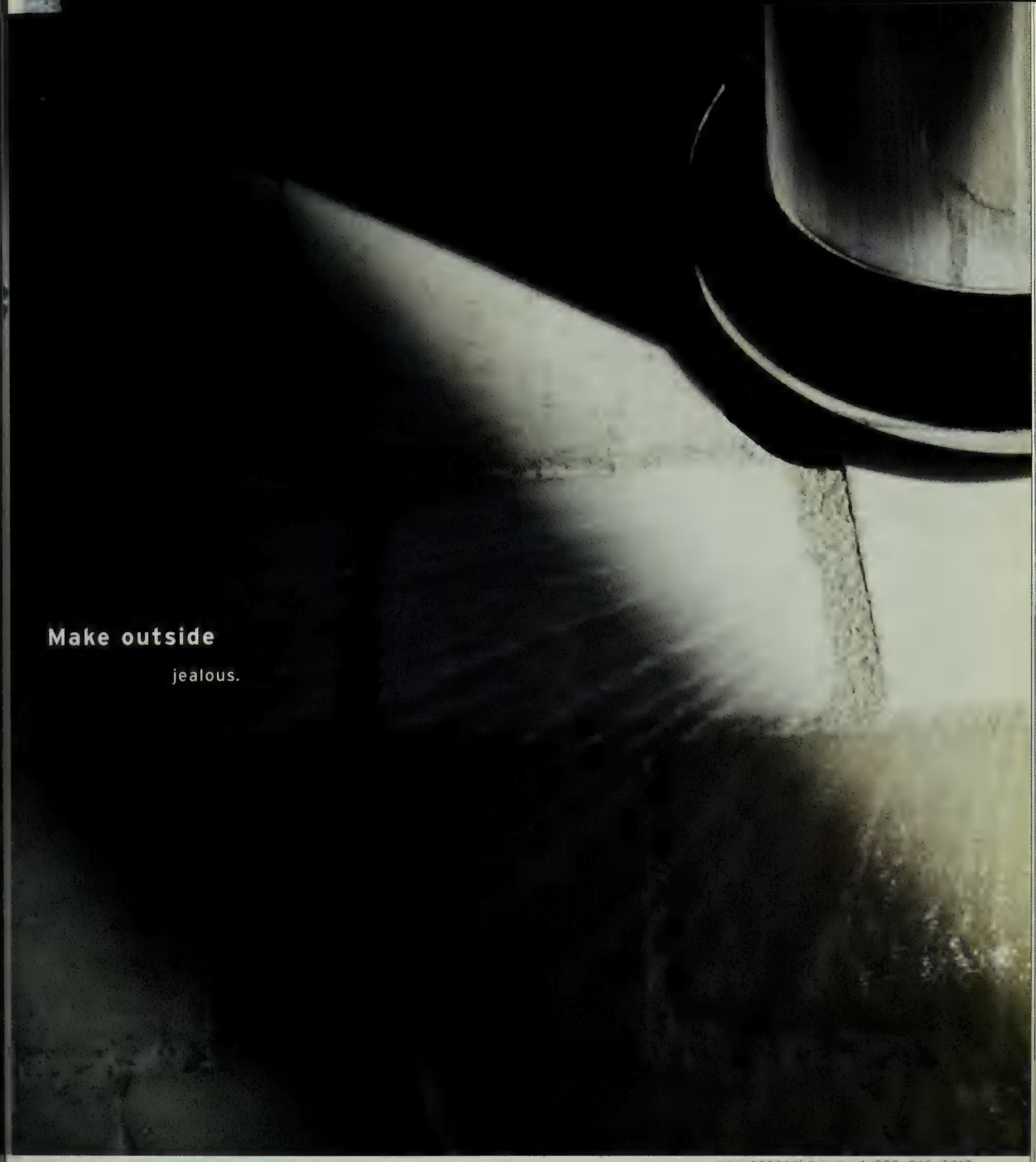
What Prikryl lacked in funds for luxuriant materials, he made up through the generosity of time—using the prolonged construction schedule to resolve details. Recalling the work of Carlo Scarpa, the concrete flooring is inlaid with blackened steel strips, visually anchored by broader end plates. Beneath these long steel insets lie readily accessible electrical conduits. On some insets stand fleets of torchieres: adjustable-height floor lamps, which Prikryl designed to incorporate off-the-shelf halogen floodlights with blackened steel stands and bases. Elsewhere, naked fluorescent bulbs reinforce the rhythms of stairs and vaults.

Linking the floors with a concrete elevator shaft, the architect carefully surrounded this vertical intervention with reveals and steel grating to provide unbroken readings of the tall penetrating element. The grating also allows light to diffuse between the floors.

Applying a sensibility consistent with his exterior treatment, the architect modified the geometries of many existing openings and interior forms, creating round windows and making the historic fabric simpler, cleaner, and more legible. He thus accentuated the walls' massiveness.

When asked if he'd have done things differently with a more expansive budget, Prikryl maintains, "I'm actually happy I had no money. It made me work with traditional materials—and think about the possibilities for even the cheapest hardware." ■

Project: *Benedikt Rejt Gallery: Renovation of former Louny Brewery*
Client: *Czech Ministry of Culture*
Architect: *Emil Prikryl (architect-in-charge); Emil Prikryl, Tomas Bczpalec, and Tomas Novotny (documentation and feasiblity studies).*
Contractor: *OSP Louny*



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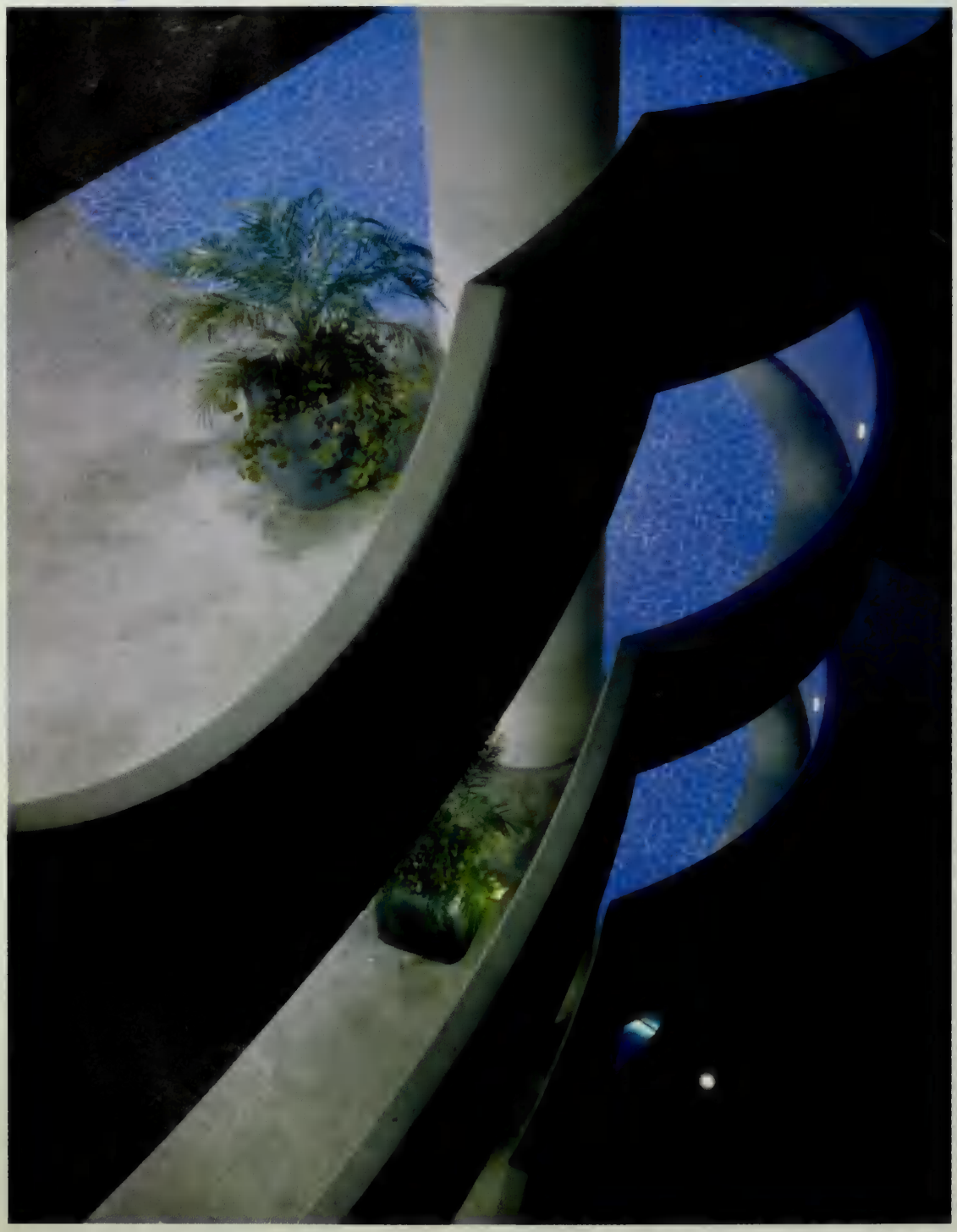

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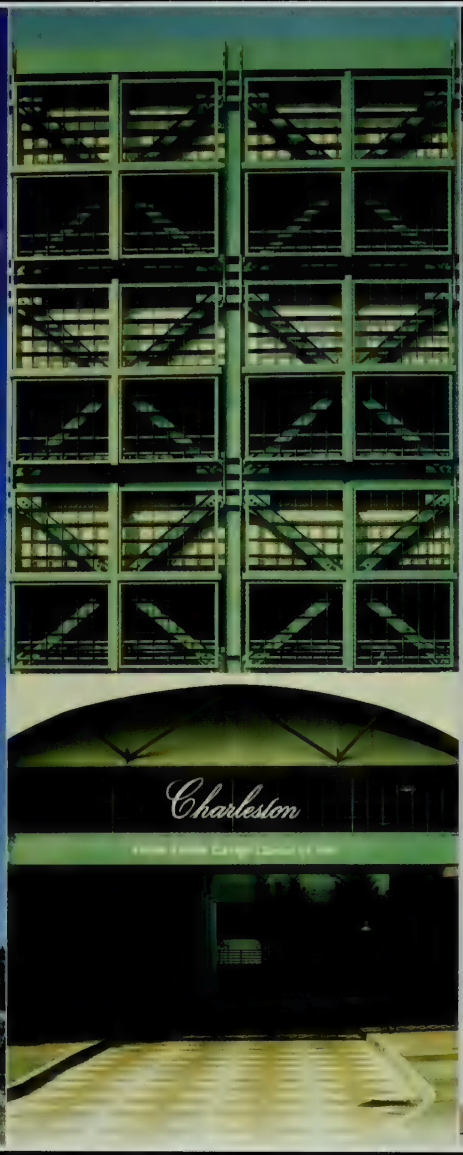

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CIRCLE 66 ON INQUIRY CARD

The Open Kitchen as Theater

IN MANY RESTAURANTS, THE VISIBLE KITCHEN IS MORE THAN AN AESTHETIC ELEMENT, IT'S ENTERTAINMENT; BUT THE REAL WORK IS DONE IN THE BACK.

by Elaine Martin Petrowski

A serious, swarthy-looking chef is manning the grill with the kind of deftness that tells the diners at El Gaucho, a Seattle steak house, that their filet mignons and New York strips are in good hands. Eyes fixed on the hot brazier, the chef looks like he's ready to pounce on the neatly trimmed steaks. Suddenly, he slips his tongs around a steak the size of a platter and quickly flips it; conversations pause as the sizzling sound fills the room.

Increasingly, dining in restaurants is more than a meal away from home, it's a carefully concocted show: the diners are the audience, the chefs are the stars, and the visible portion of the kitchen is the stage. The open-kitchen trend started about 10 years ago as a way for chefs to show off the freshness of their ingredients and the cleanliness of their kitchens. Now, the open kitchen has evolved into entertainment, a frenzy of activity just a few feet from the table. Teaching kitchens at cooking schools require similar staging skills. The preparation areas must be clearly visible to students—whether they are in the kitchen, assisting with the preparation, or observing from a viewing area. The acoustics of the room must be good enough that the instructor can be heard above the clatter. And, because most of these schools have a dining area surrounding the kitchen, the rules of restaurant design apply.

Architects asked to design open-kitchen space must understand the elements of culinary suspense and how commercial kitchens work. To do this, they rely on a carefully assembled team that usually includes the restaurant owner, a mechanical engineer, a professional foodservice consultant or commercial kitchen designer, a lighting consultant, an interior designer, and the chef. "The architect functions as the maestro of the

Elaine Martin Petrowski is a freelance writer specializing in kitchens and bathrooms. She is based in Ridgewood, N.J.

SEATTLE'S EL GAUCHO, designed by Arellano/Christofides Architects, has a stainless-steel, 36-inch-tall pass shelf between the front line and the 230-seat dining room. That's low enough for an unobstructed view of both the vertical and horizontal charcoal-fire grill, but high enough to hide countertop debris. All the display kitchen surfaces are polished stainless steel, with the exception of the tile backsplash. Four or five chefs occupy the space at peak times. The visible kitchen was intended to give the restaurant a focal point. "We had to do something to create drama; there was no view, no daylight, and the windows are walled over," Margot Arellano, AIA, says. The clublike decor suggests the 1940s, with boomerang-shaped booths, salvaged fixtures from the era, and a midnight-blue and black color scheme.

1. *Kitchen*
2. *Open kitchen*
3. *Dining area*
4. *Banquet room*
5. *Bar*
6. *Entry*
7. *Storage*
8. *Refrigeration*
9. *Dishwashing*

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 178 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe the concept of restaurant dining as theater.*
2. *Explain what drives the design of a commercial kitchen.*
3. *Describe the types of materials specified for commercial kitchens.*
4. *Explain how acoustics, lighting, and ventilation influence the design of a visible kitchen.*

orchestra, making sure everyone comes in at the right time," says William Eaton, senior vice president at Cini-Little International, a foodservice consulting firm in Rockville, Md. Each of these individuals brings an area of expertise to what is, for such a small space, a complex design process.

What's on the menu?

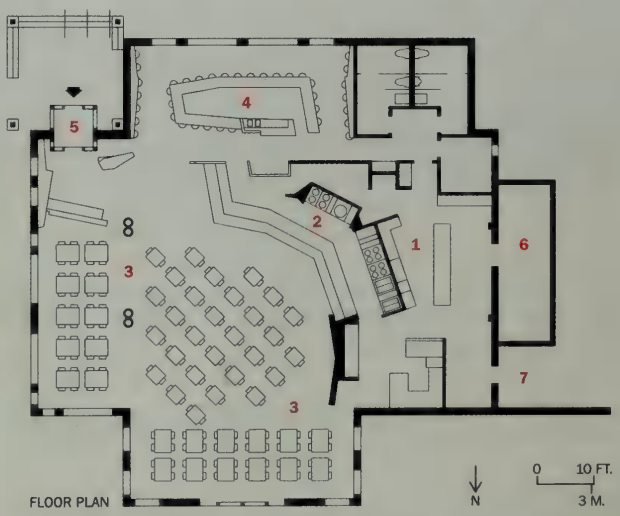
The design of an entire kitchen, including the portion that is visible and the larger area hidden behind doors, is driven by the menu. A steak house, for example, has a different kitchen, one that is focused on the cooking of meat, than an Italian restaurant, where a pizza oven is emphasized. The architect meets with the chef and/or owner to analyze the menu and its requirements in detail. Every step of the food-preparation process is thought through. For example, where do the trucks make their deliveries? Where are ingredients stored? At what stages in the cooking process should there be access to water? How much workspace is required? At what point do operations move from the back of the house to the demonstration area? Is a workstation required near the oven? If so, how close?

Also early in the design process, the chef, the owner, and the architect decide the division of space within the restaurant. The kitchen typically occupies 25 to 30 percent of the total area. Within the seating area, about 30 square feet is allotted to each diner. A 6,000-square-foot restaurant accommodates 200 to 225 diners. The remainder of the space is used for restrooms and support functions. Thus, a 6,000-square-foot restaurant contains a 1,500- to 1,800-square-foot kitchen. The portion that is visible is much smaller, perhaps 450 square feet, depending on how much of the process the chef wants to display.

"The budget plays a part in this, too. An open kitchen requires attractive finishes, while the hidden kitchen is made of service materials—surfaces that are durable and clean easily but aren't necessarily attractive," says Eric Engstrom, an interior designer with theatrical experience. He and his partner, Jennifer Johanson, AIA, run Engstrom Design Group, restaurant designers in San Rafael, Calif. "An open kitchen demands decorative tile, a custom ventilation hood, a soffit to hide mechanicals, a granite top on the serving line—all this adds 25 to 30 percent over the cost of a standard kitchen," he says.

The initial floor plan is fine-tuned by a professional foodservice consultant or a commercial kitchen designer. The latter usually represents a kitchen-equipment distributor or manufacturer, while a foodservice consultant often operates independently. In both cases, designers are often trained as professional chefs, though many are also architects or engineers. They have different areas of expertise—some do white-linen restaurants and others fast food.

Consultants understand professional cooking and kitchen traffic flow. They advise the architect on the optimal layout of appliances, work areas, and sinks, aiming to minimize the number of steps in preparing a



1. *Kitchen*
2. *Open kitchen*
3. *Dining area*
4. *Bar*
5. *Entry*
6. *Refrigeration*
7. *Service area*

EVERYTHING ABOUT THE DESIGN OF MONSOON Restaurant, in Hanover, N.H., complements the contemporary Southeast Asian bistro menu. Designed by Jim Batchelor, AIA, of Arrowstreet Inc., and Paul Lukez, AIA, both of Somerville, Mass., the kitchen includes a salamander, a broiler that sits above the range; double narrow fryers that generate up to 55,000 British Thermal Units each (an average kitchen burner generates 6,000 BTU); a six-hole wok range; a custom wood-fired grill; and a steam cabinet, a small convection steamer used for rice and vegetables. Custom stainless-steel tables fill spaces between appliances. The floor is sealed concrete. Copper and laminate-faced panels are used on the restaurant side of the stainless-

lobster or a leg of lamb. They also provide guidance in selecting shelving, countertops, appliances, and cooking equipment.

Line 'em up

Although space constraints may demand another solution, most professional kitchens are designed as a series of parallel counters, called "lines," the number of which varies according to the size of the kitchen. The lines are set up back-to-back, like Pullman kitchens. The line farthest from the dining room is adjacent to the cold and dry storage areas, where cans are opened, bulk ingredients are measured, and items are retrieved from the back pantries. At the next line, vegetables are washed, peeled, and chopped; fish are cleaned; and meats and poultry are cut. Cooking begins at the third line, where soups and stocks are assembled and simmered, breads and desserts are baked, and sauces are made. Normally, the back lines are kept out of sight. No one wants to see fish being cleaned, the dishwasher, or the brand names on the dairy products stashed in the coolers.

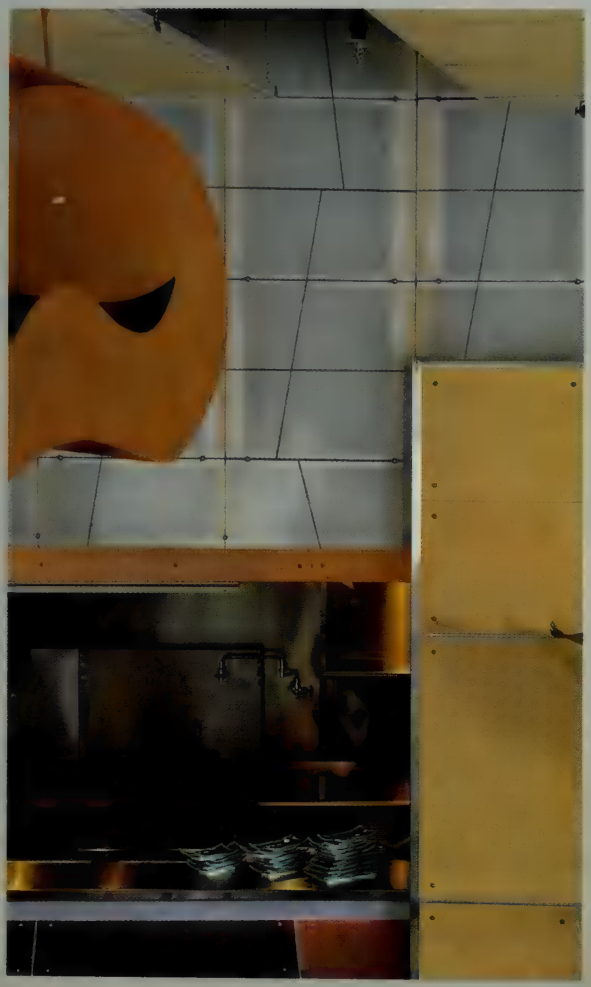
Once the food moves to the front line, things get interesting. This is generally the part of the kitchen on view. Here, the cooking is finished and food is plated, garnished, and served; it's also where the crabs are steamed, the chops are grilled, the pizza comes out of the brick oven, and buttery sauces are drizzled over entrees.

Controlling what the patrons see is what visible kitchens are all about. "Everything involved in the final preparation is in full view," Engstrom says. "Here you have lots of activity—four to five chefs moving around, putting up food for customers to see, the wait staff coming in for pickups—and everyone in the place is watching."

Margot Arellano, AIA, of Arellano/Christofides Architecture and Interior Designs in Seattle, agrees. About 40 percent of the firm's business is restaurant design. "You must choose what you want the audience to see," she says. "Confine the view to what's interesting and action-packed: glinting ladles, puffs of steam, the lick of flame." In some restaurants, chefs are even encouraged to splash a little oil over the side of the pan now and then to create a fearsome flash of fire.

"Let patrons see the final assembly. Highlight the expediter, the person who makes sure that the orders get into the kitchen and hands off the finished plates to the wait staff. Put him or her at a clean, stainless-steel counter with a shelf above for plates and neat bins for garnishes," Arellano adds. Along with the show, food preparation should look sanitary and graceful. With an efficient setup, the chefs are in a dance, their movements economical and productive. Dishes shouldn't break, food shouldn't slop onto the floor, and chefs shouldn't bump into each other as they prepare their specialties.

Labor represents as much as 40 percent of a restaurant's operating costs. That makes a smooth workflow essential. "The cooks shouldn't have to take an extra step or do acrobatics to reach the ingredi-



KITCHEN PLAN

steel pass shelf. Translucent plastic shoji screens provide decorative elements. Paper would have absorbed cooking oils and disintegrated. The rusted iron panel hides the ventilation system. A canted plaster canopy and the daily presentation of fresh vegetables and other ingredients below it is meant to resemble an open-market stall. The canopy also helps hide the mechanical system. The low ceiling in the kitchen sets that space apart from the 150-seat restaurant and contains the ventilation system. Carpeted floors and bamboo wrapping on structural-steel pillars help to keep the noise level under control in the seating area.

1. *Refrigeration*
2. *Freezer*
3. *Sink*
4. *Shelving*
5. *Ice machine*
6. *Work table*
7. *Ovens*
8. *Ranges with ovens*
9. *Broilers*
10. *Steam cabinet*
11. *Undercounter refrigeration*
12. *Wait-staff station*
13. *Skullery*

ents," says Bob Mesher, AIA, of Mesher Shing Associates, a Seattle firm that has designed many restaurants. The kitchen should be compact and efficient, though not too small. "There should be enough circulation around the visible kitchen and its position must relate well, not only to the dining/public side, but also to the prep kitchen," he adds.

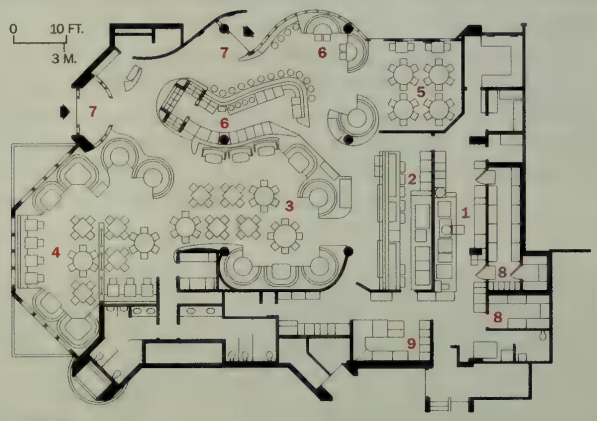
Keeping the flow circular means the wait staff can get where they need to go without backtracking. Workers should not go near the food prep areas with soiled dishes, so the path to the skullery should be kept separate. Some areas, such as where main courses are picked up, are always busy. Putting the dessert or salad station on top of those areas adds to the chaos. Diners will feel nervous if the wait staff looks harried and disorganized, thanks to poor design.

An unobstructed sightline is most important whether the demonstration kitchen is located in a restaurant or a cooking school. In the latter, care must be taken not to block views of the instructor and the preparation surface. A downdraft ventilation system, for example, eliminates the bulky ventilation hood that could get in the way. It also frees space above the cooktop for a reflective surface, such as highly polished stainless steel, allowing students and guests to see what's going on.

Some cooking functions are just not attractive, such as frying food or steaming rice, and these are best kept off the front line. If they must be there, install visual barriers. A low or translucent barrier, like an elevated pass counter (or service line) or a fritted glass wall between the kitchen and the dining room, hides spills and scraps at counter level. Some equipment and appliances, such as refrigerators, can be kept out of sight by tucking them beneath the counter. Drawers or solid doors hide clutter on the front line, though open shelves are easier to work with and are best for the rest of the kitchen. A hole cut into the countertop, with a trash bin beneath, makes it easy to get rid of messes quickly.

THE CALIFORNIA CAFÉ BAR & GRILL IN SCHAUMBURG, ILL., by Engstrom Design Group, serves California cuisine. The open kitchen, visible from all 200 seats in the restaurant, directs views away from the adjacent Woodfield Mall and its huge parking area. The kitchen is divided with a granite-topped pass shelf that is clad in wood veneer on the restaurant side. Work counters are maple butcher block or stainless steel. The back wall of the open kitchen is covered in ceramic tile and stainless steel, and acid-etched copper panels hide the exhaust hood. The floors are quarry tile. Actual cooking ingredients are set on metal shelves on the wall behind the pantry. Noise is mitigated in the dining room with a combination of drop-in acoustical ceiling tiles, carpeting, fully upholstered booths, and heavy draperies dividing open, private, and semiprivate dining areas.

1. *Kitchen*
2. *Open kitchen*
3. *Dining area*
4. *Semiprivate dining*
5. *Private dining*
6. *Bar*
7. *Entry*
8. *Refrigeration*
9. *Dishwasher*



FLOOR PLAN

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CIRCLE 67 ON INQUIRY CARD

Lights! Noise! Ventilation!

Lighting presents a conflict in an exhibition kitchen: the space cannot be so bright that it distracts from the dining experience, but the front line is a work area and workers need to be able to see. Lighting levels here are also regulated by health departments, which dictate that lamps must be covered with lenses to prevent broken glass from falling into food.

Philip Christofides, AIA, solves the discrepancy in lighting levels by using the same type of lighting for both the front line and the dining room. "We use incandescent lamps and downlight the perimeter of the front line so that you can see deep into the space. Keeping the dining room a notch darker makes the kitchen a focal point," he says.

Dino Sakellar, AIA, of Sakellar Associates Architects and Planners in Tucson, who specializes in restaurant design, avoids ceiling-mounted lights and installs task lighting—a shelf with lamps directed onto the work surface. The shelf doubles as a place for finished plates to await pickup. Heat lamps above the shelf keep food warm.

The open kitchen can also be highlighted with spotlights directed toward dramatic areas—the expediter's counter, the grill, or an interesting appliance, such as a tile- or brick-clad wood-fired oven. The rest of the space can be lighted with temperature-corrected fluorescents.

Sound is another element that can be controlled to create a lively restaurant or one that's subdued. Some clatter raises the energy level. "The sound of food sizzling is appealing, but the kitchen is basically a food factory, and factories are noisy," Christofides says. Conversation among workers, chopping, and the sound of equipment running adds to the din. The very nature of the materials mandated by health regulations defy any attempt to attenuate the noise. For example, everything must be washable, including the ceiling. That eliminates acoustical ceilings. Most open kitchens use drop ceilings (to allow access to ventilation) with ceramic-coated ceiling tiles. Sound-absorbing ceiling tiles, carpeting, table linens, and upholstered chairs and banquettes reduce noise in a restaurant. Placing the tables several feet from the line also helps.

At some restaurants, including Spago in Beverly Hills, open kitchens are encased in glass; diners see the operation, but can't hear the noise. At the opposite extreme are kitchen tables, which allow "dedicated foodies" to sit in the kitchen with the chefs, says Engstrom.

Ventilation systems, which suck as much as 8,000 cubic feet of air per minute, evacuate the moisture, odors, smoke, and other cooking effluent. In addition, natural gas combustion emits noxious gases, and cooking accidents can flood a room with smoke and odors. Excess heat from a wood-burning oven, for example, which can reach 700°F, will overtax an air-conditioning system. All these must be vented.

Ventilation is custom designed for each space. As a rule, a canopy over the range is more efficient at evacuating smoke and steam than a downdraft, though the latter allows a better view of the kitchen. A downdraft system must be about 20 percent stronger than a hood because it must capture the hot air and pull it down, instead of allowing it to rise, according to the laws of physics.

"Ventilation is a science," says Mark Stech-Novak, owner of MSNRCD, a restaurant design firm in Oakland. He designed the kitchens for Le Cirque 2000 in New York City and Aureole in Las Vegas. Stech-Novak does his own initial ballpark figures on the ventilation system but relies on the calculations of a manufacturer. Specifying these systems correctly also avoids drafts blowing on the staff or the diners, which can

PRODUCTS

If the open kitchen adds drama to dining out, then the commercial ranges and hoods below play important roles. Consider durability, ease of maintenance, and required daily upkeep when shopping around.
Rita F. Catinella

Ranges

Garland Commercial Industries The Master Designer Island Suite (right) includes a char-broiler, open-burner top, oven, fryer, 12-gauge stainless-steel worktop, refrigerator, and storage base. 800/424-2411. www.garland group.com

U.S. Range The SunFire Series line offers 24-, 36-, and 60-inch-wide models, a stainless exterior, and 22,000 BTU burners. 800/424-2411. www.garland-group.com

Wolf Range Products include convection ovens and stock-pot ranges. Wolf also offers a selection of ovens, broilers, and grills. 800/637-9653.

Vulcan-Hart Company Convection oven, induction, and stock-pot ranges. Also a variety of steamers, ovens, and broilers. 800/814-2028.

Southbend A range of gas, electric, and steam professional cooking equipment. Chinese, induction, and stock-pot ranges are available. 800/348-2558. www.middleby.com

Bonnet Cidelcem Grande Cuisine This French company offers custom-designed cooking suites, featuring highly technical cooking elements inside a one-piece unit with a solid titanium surface. 201/444-2682.

Jade Products Company Kitchen cooking equipment includes gas ranges, stoves, open burners, and griddle tops, with cabinet and oven bases. Fire and Ice System features a range top and refrigerator base built as one. 800/884-5233.

Dynamic Cooking Systems Professional Restaurant Range Series includes a stainless-steel stock pot, counter hot plate, char-broiler, and counter griddle. 800/433-8466. www.dcs-range.com

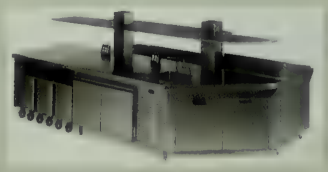
Hoods

Gaylord Industries Water-wash ventilators; energy-saving, low-air-volume ventilators, air-to-air heat reclaim units, smoke pollution control units, and water-spray fire protection systems. 800/547-9696. www.gaylordusa.com

Carroll Manufacturing Intl. The Five Series has over 200 model configurations available to vent exhaust from any type of cooking equipment. 800/444-9696. www.carrollmi.com

Abbaka Hoods (top left) may be ordered for use in commercial kitchens. Specs must be provided for in-hood fire-extinguishing systems and lighting. 800/548-3932. www.abbaka.com

Vent Master A selection of stainless-steel hoods, from a filter to water wash, depending on cooking needs. 800/565-2981. www.garland-group.com



Caddy Corporation Caddy offers a selection of kitchen ventilation hoods and utility distribution systems for commercial kitchens. 609/467-4222. www.caddycorp.com/airsystems.html

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CIRCLE 68 ON INQUIRY CARD

make the restaurant uncomfortable and cool the food. Ventilation returns should be located in the ceiling away from the food and prep areas.

Safety first

Health regulations for an open kitchen are the same as those for a closed kitchen: the number and location of wash sinks are mandated, as are nonslip floors. Ample passages and aisles are required by the ADA. Equipment must be movable so that the floor can be thoroughly cleaned. Countertops, work surfaces, walls, ceilings, and equipment must be easily disinfected without the risk of cleaning agents coming in contact with the food. Flooring choices are few. Poured epoxy-resin flooring, which is seamless, is preferred because it's easy to clean and can be cushiony, making it more comfortable for those who have to stand on it all day. Textured concrete must be treated with sealer to make it impervious to spills and crumbs. "We like quarry tile with a 15 percent carborundum grit," Eaton says. It's durable, safe, and mops easily. He also recommends putting a trench in the floor with a nonskid grid directly in front of any appliance that drains water, such as ice machines or steamers.

Butcher block is allowed in parts of the kitchen, but the overwhelming preference is stainless steel, with joints sealed for cleanliness. On the pass shelf, laminates and synthetics aren't normally used unless there are budget constraints. Better choices are nonporous stone and stainless steel. Sinks of stainless steel are also first choice because of durability and cleanability; 14 gauge is sufficient; 12 gauge is better, but costs more. Slop sinks must be separate from those used for food.

Appliances should be chosen with service in mind. "When it breaks on Friday night you need service then, not on Monday," Sakellar says. "Chefs and managers know the products and deal with them all the time. If they have a preference, we go with that." The equipment needs to be versatile enough to accommodate changes in the menu, Eaton says. Single-use items, like a tortilla maker or a customized grill, take up large amounts of space. These items are best if they serve as a focal point in a visible kitchen or make a statement about the cuisine that is served.

BRAIDS OF GARLIC, BOTTLES OF OIL, STRINGS OF PEPPERS ADD TO THE DRAMA, AND ANYTHING INVOLVING FIRE WILL ELICIT A FEW WELL-EARNED GASPS.

Showtime

Safety, code requirements, and industrial-strength cooking equipment leave little room for aesthetic considerations. Here, again, the menu dictates the show. "There's a lot of drama in Mediterranean cuisine," Engstrom says. Braids of garlic, bottles of oil, strings of peppers—all these add to the setting. And anything that involves fire, like a wood-burning oven, will elicit a few well-earned gasps from the diners.

Otherwise, says Mesher, "A well-designed space speaks for itself. You don't need to add a lot of extras." A tile backsplash, stainless-steel cases, a beautiful range hood, and iced displays of shellfish, fresh vegetables, or desserts, along with the clean design of stainless-steel commercial appliances—these establish the atmosphere. ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "The Open Kitchen as Theater" using the learning objectives provided.
- Complete the questions below, then check your answers (page 210).
- Fill out and submit the AIA/CES education reporting form (page 210) or file the form on ARCHITECTURAL RECORD's Web site at www.archrecord.com to receive two AIA/CES learning units (LUs) at Quality Level 2, including one hour of health, safety and welfare credit.

QUESTIONS

1. How does a restaurant function as a theater?

2. What drives the design of a kitchen?

3. What is the make up and function of the design team for a commercial kitchen?

4. What aspects need to be considered when specifying materials and designing a commercial kitchen?

5. What elements affect the atmosphere of a restaurant?

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NEW SOLUTIONS FOR DESIGN CHALLENGES

Acrylic-Based Solid Surface Materials

The ever-present challenge for any architect and designer is to find the right balance between the aesthetics of a material, its performance characteristics and its long-term value. One material that delivers an enviable balance of these attributes is growing in popularity for commercial and residential surfacing applications, as well as in manufactured goods: Acrylic-based solid surface products.

Acrylic-based solid surface products were developed in the 1960s to meet the need for a surfacing material that would be more durable than laminate, more water- and stain-resistant than stone or wood, and more renewable than any other surfacing material then available, including metal.

Solid Surface Material Applications

Acrylic-based solid surface products have gained wide acceptance for kitchen and bath applications. It is these applications in which they are best known. However, these products are increasingly seen in a very broad variety of commercial design applications and in manufactured furniture, since they offer a balance of aesthetics, design versatility, durability, renewability, and long-term value that competitive materials cannot match. These applications include commercial and residential furnishings and the interior and exterior finishes of retail stores, banks, corporate offices, public buildings, airports and train stations.

For the renovation of the Grand Central Station terminal in New York City, for example, wingback chairs reminiscent of the Pullman Car era were created from thermoformed sheets of acrylic-based solid surface material. These chairs are durable enough to withstand the rigors of a very busy public area. Because color and pattern run throughout the sheet, scratches and graffiti typically are easily removed on site by sanding and buffing. Matte, satin, and high-gloss finishes can be quickly restored to their original appearance.

Because these acrylic-based solid surfaces are nonporous, they are quickly gaining acceptance in applications where cleanliness is an issue, in such market segments as health care, hospitality/lodging, education, military housing, and food service. In these applications, the tactile qualities of acrylic-based solid surface materials are also highly desirable. Unlike stone surfaces, these materials are not cold to the touch.

Due to its inherent translucent qualities, acrylic-based solid surfaces are also gaining acceptance in lighting fixtures and retail store displays.

Acrylic-based solid surface products are made in a wide range of colors and textures. Custom colors and textures can be developed to meet design requirements.

AIA/ARCHITECTURAL RECORD Continuing Education

Use the learning objectives below to focus your study as you read *New Solutions for Design Challenges: Acrylic-Based Solid Surface Materials.* To earn two AIA/CES Learning Units including one hour of health safety welfare credit, answer the questions on page 184 and follow the reporting instructions on page 210. Or use the Continuing Education self-report form on *Record's* web site – www.architecturalrecord.com.

Learning Objectives

After reading *New Solutions for Design Challenges: Acrylic-Based Solid Surface Materials* you will be able to:

1. Describe the reasons for the popularity of solid surface materials.
2. Describe the historical development of acrylic-based solid surface materials.
3. Explain the process of cladding an exterior column with acrylic-based solid surface material
4. List the performance advantages of acrylic-based solid surface materials.

A Solid Surface Primer

Acrylic-based solid surface products are cast in sheets from methyl methacrylate (acrylic polymer), minerals and pigments, in most cases. Color and pattern run throughout the sheet. This provides inherent advantages in design versatility and renewability when compared more traditional surface materials. (Before you choose, check product information from the manufacturer to see if it meets your needs.)

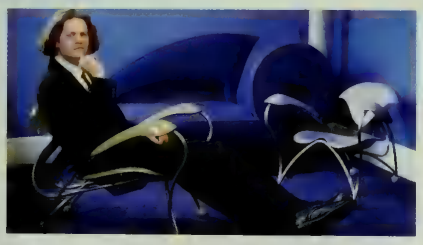
- A seamless, monolithic appearance can be achieved when sheets are joined with the manufacturer's color-matched epoxy adhesives. Grout lines and open seams are replaced by unobtrusive, impermeable joints.
- Acrylic-based solid surface materials offer exceptional versatility. Sheets can be thermoformed, sandblasted, routed, sculpted, engraved, inlaid with other materials, and polished to any desired level of gloss. Because acrylic-based solid surface materials are inherently translucent, they can also be backlit for dramatic effects.
- Color and pattern run throughout the sheet and cannot wear away or delaminate. This results in a remarkably durable, renewable surface.
- Acrylic-based solid surface materials resist stains, because liquids cannot penetrate the nonporous surface.
- Scratches or graffiti are easily removed, usually with ordinary abrasive cleaners and pads.
- Even severe damage generally can be repaired on site, saving both labor and resources.
- Renewability and durability make acrylic-based solid surface materials environmentally friendly by nature, since they can be restored rather than be replaced.
- Acrylic-based solid surface products are inert, non-toxic, chemically unreactive, and hypoallergenic. There is virtually no off-gassing at normal room temperatures.
- Even when exposed to direct flame, acrylic-based solid surface is one of the least toxic materials available.
- Products are nonporous and inert. Therefore, they cannot harbor dirt, absorb moisture or support microbial growth.

Challenge: Form & Function Beyond the Scope of Tradtional Materials

Solution: Solid Surface

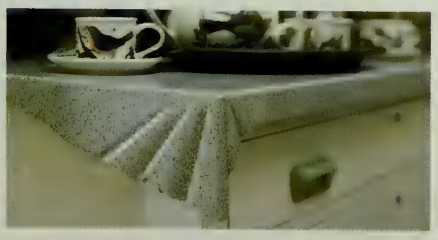
Architects and designers are discovering new ways to mold and shape acrylic-based solid surface materials to produce an astonishing range of products. As Kevin Walz, designer of lighting products seen below, suggests, "The material has a wonderful chameleon quality. It has a very different character if it's sliced square or if it's gently rounded. It can serve many different purposes, depending on the nature of the application." And it is "remarkably easy" to manipulate, he adds.

Futurist Chair Design



For the design of a new chair, architect and furniture designer Matthew Hoey basically "melted" the acrylic over the frame. From the ball feet, made of solid surface material, a sinewy stainless steel frame curves skyward, capped by organically thermoformed shapes of 1/4 inch acrylic-based solid surface material to form the seat, back, and armrest. Hoey designed the chair to frame the human body in comfort.

Stretching the Envelope



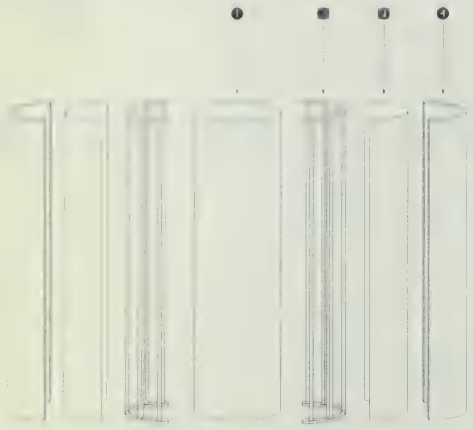
The use of solid surface materials for countertops is a commonly known practice. For a landmark mansion in Kansas City, Mo., a typical countertop was sculpted to create a unique focal point. Craftsmen employed a variety of techniques, including sandblasting, to create the look of a tablecloth edge.

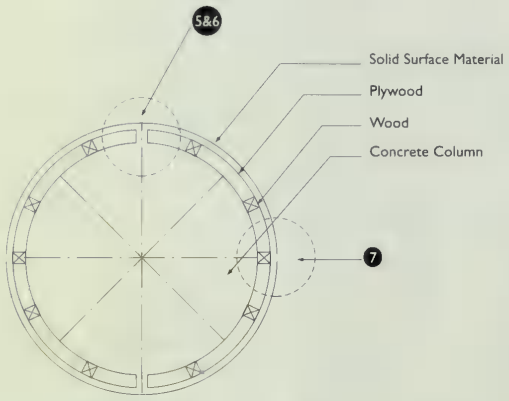
Radiant Lighting Collection

In designing a new lighting collection for Baldinger Architectural lighting, designer Kevin Walz was attracted to solid surface material because of its translucent properties. When the material is polished to soft lusters and thermoformed into sensuous curves, a dramatic diffusion of light is achieved as the material holds the color pigment and produces radiant color.

Pioneering Application

At a beachfront home in Stone Harbor, N.J., the bathroom counters and sinks - and the shower wall surfaces - were finished with solid surface materials in 1968.





Cladding a Round Column: The Basics

Cladding for the exterior columns of the International Club (right) was fabricated and installed using the following basic procedures. Precise fabrication techniques may vary, according to manufacturer's guidelines or the specific requirements of the project.

1. Measure the maximum diameter of the column.
2. Prepare semi-circular wooden frames in pairs, with half circles of 1/4 inch (6mm) plywood and squared conventional lumber 2x2's (40mm x 40mm).
3. Cover wooden frames with 1/8 inch (3mm) flexible plywood.
4. Thermoform two sheets of 1/2 inch (13mm) acrylic-based solid surface material so the inner radii match the outer radii of the wooden frames. This is done by clamping heated sheets between male and female wooden presses constructed to the required shapes.
5. Attach plywood-covered wooden frames to the columns. Allow room for expansion between the wooden frames. Additional support or shimming can be inserted between the concrete column and the wood frame, for a snug fit.
6. Adhere the thermoformed sheets to the wooden frames with high-performance tape. Position sheets so they bridge the expansion gaps of the wooden frames.
7. Join sheets with two-part acrylic joint adhesive, then sand and finish.
8. Fabricate bases and capitals from acrylic-based solid surface material to meet design requirements. Attach components with two-part acrylic joint adhesive, sand and finish.

Challenge: Cladding Round Structural Columns
Solution: Thermoformed Acrylic-Based Solid Surface

One application in particular clearly illustrates many of the benefits of acrylic-based solid surface materials in commercial applications: Cladding round structural columns. Structural columns can present aesthetic challenges for any architect or designer. They are inevitably large, often obtrusive and typically unattractive in their raw form. Acrylic-based solid surface materials can be used to create colorful, durable, renewable cladding around columns that will offer long-term performance, enduring aesthetics and renewability. A sleek, monolithic appearance can be achieved, since grout lines and open seams are replaced by unobtrusive, impermeable joints that appear seamless. For round or elliptical columns, sheets can be thermoformed to the required contours.

Public Relations Start with a Warm Reception

When a public relations firm remodeled their New York City office, they confronted an obstacle: A structural column right in the middle of their reception area. The solution was cladding of thermoformed acrylic-based solid surface sheets. Polished to a high gloss, the elliptical, monolithic column is striking, yet it blends with the overall color palette of the offices.

Greek Classic Meets Chinese Modern

A classic Doric column design was reinterpreted in acrylic-based solid surface material for the facade of the International Club in the Tianjin Economic and Technological Development Area (TEDA) in the People's Republic of China. Exterior columns easily withstand temperature variations from minus-20°C=20(minus-4°F) to 36°C (97°F). Acrylic-based solid surface was also the material of choice for the lobby fountain, the lazy Susan in the Chinese restaurant, bar and service countertops and vanity tops throughout the 17,000-square-meter facility.

The World's Largest Casino

In order to create an elegant yet easily maintained ambiance at the Foxwoods Resort Casino in Mashantucket, Conn., acrylic-based solid surface materials were used throughout for bathroom counters and sinks. In the soaring atrium, thermoformed solid surface materials encircle three-story columns.

DuPont: Originator and World Leader in Solid Surface Materials

DuPont is the originator of solid surface materials and continues to be the leading manufacturer in the industry it created. DuPont's registered trademark for its acrylic-based solid surface materials is now known around the world: DuPont CORIAN®

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Learning Objectives

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Instructions

Refer to the Learning Objectives at above. Complete the questions below. Then turn the page upside down and check your answers. Fill out the reporting form on page 210 and submit it or use the Continuing Education reporting form on *Record's* web site www.architecturalrecord.com to receive two AIA/CES Learning Units including one hour of health safety welfare credit.

Questions

1. Why are acrylic-based solid materials growing in popularity for commercial and residential surfacing applications?

2. Why were solid surface products developed?

3. What is the process of cladding columns with acrylic-based solid surface?

4. How is a monolithic appearance achieved in cladding with acrylic-based solid surface materials?

5. What are the performance advantages of acrylic-based solid surface products?

Answers

1. Acrylic-based solid surface materials allow designers to specify a material that meets their aesthetic, performance, and long-term value requirements. They are available in a wide range of colors and patterns, are maintained easily through sanding or buffing on site, withstand temperature extremes, and are nonporous to resist stains and microbial growth.

2. In the 1960s acrylic-based solid surface products were developed to meet the need for a surfacing material that would be more durable than laminate, more water and stain resistant than stone or wood, and more renewable than any other surfacing material available at that time.

3. Two semi-circular wood frames of 2x2's are attached to the column allowing for expansion between the two and shimming for a snug fit. The wood frames are covered with 1/8 inch flexible plywood. Two thermoformed sheets of 1/2 inch acrylic-based solid surface are attached to the wood with high performance tape. Sheets are joined with two-part acrylic joint adhesive, then sanded and finished.

4. Sheets are joined with the manufacturer's color-matched epoxy adhesives. Typical grout lines and open seams are replaced by seamless, unobtrusive, impermeable joints.

5. Acrylic-based solid surface products offer performance advantages of color and pattern running throughout the sheet, so they cannot wear away or delaminate. They are durable, renewable, and stain-resistant. Scratches or damage are easily removed or repaired on-site. Acrylic-based solid surfaces are inert, non-toxic, chemically unreactive and hypoallergenic material, with virtually no off-gassing at normal room temperatures. Even when exposed to direct flame, they are one of the least toxic materials available. Because they are nonporous inert surfaces and they are applied without seams, they cannot harbor dirt, absorb moisture, or support microbial growth.

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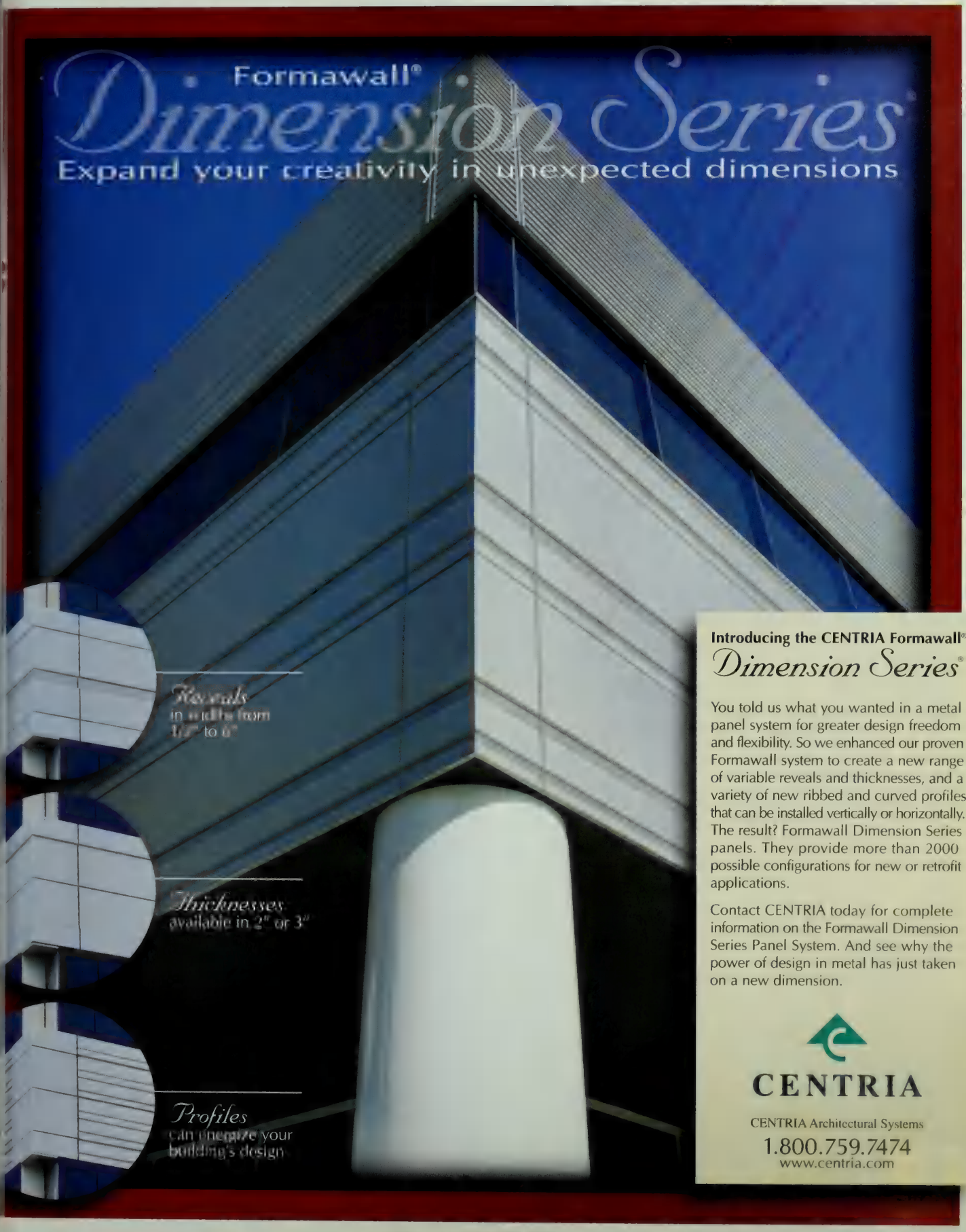

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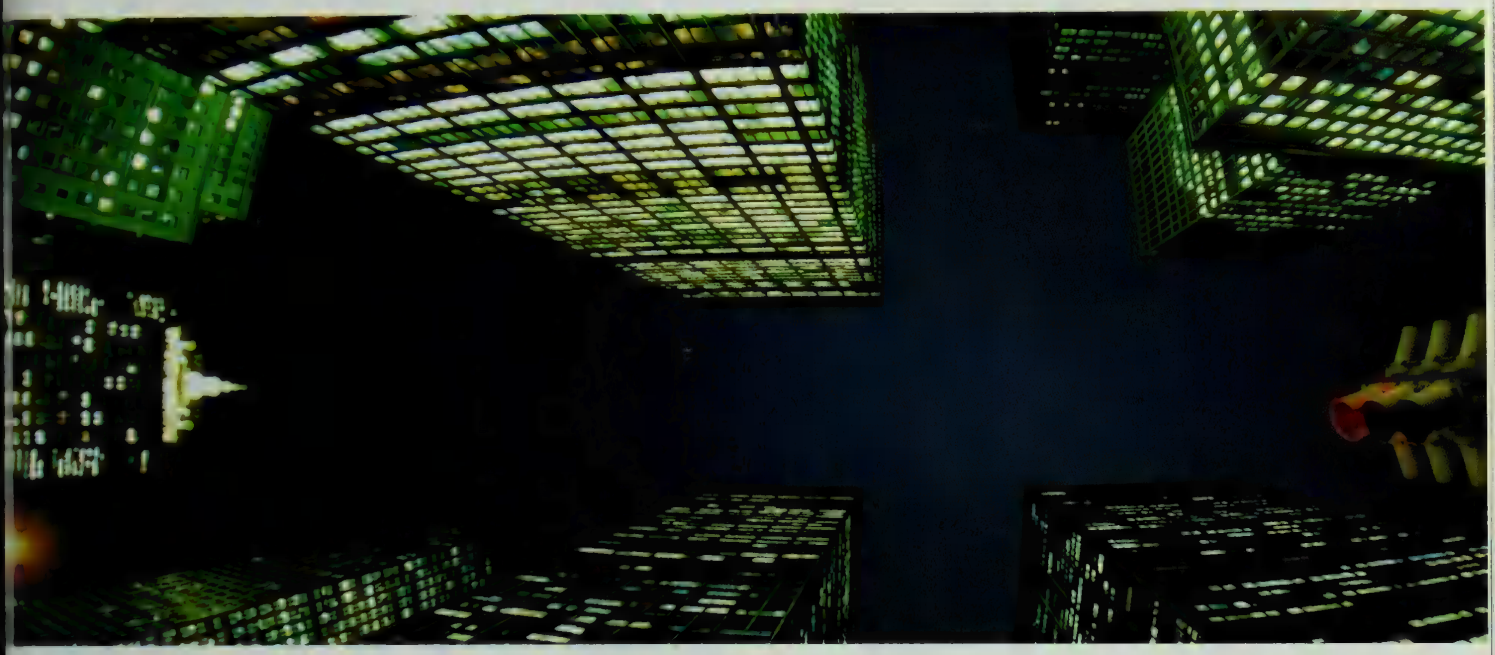

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Dare To Dream...

For 85 years, children with dreams of performing have attended the renowned Perry-Mansfield Performing Arts School and Camp. Now the oldest, continually-operated dance and theatre camp in the country, its distinguished alumni include; Doris Humphrey, Merce Cunningham, Agnes de Mille and Dustin Hoffman.

"The Pavilion", a focus of great pride for the school, was designed with wide, open-air spaces and symbolizes life's essentials: a person, the land, and the sky. Expansive walls of hinged patio and sliding doors frame the structure, and windows with small, divided-lite patterns represent trees and leaves.

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NEW PRODUCTS

What better helps us enjoy our interior spaces than the windows and skylights that let in natural light? These products also protect us from the natural and unnatural forces that might otherwise ruin our day. The case study below explains how the windows of the Cornell Medical School were able to withstand the sudden force of a water-main break, preventing a costly clean up and the loss of valuable research. The following pages feature a roundup of skylights and windows, as well as a collection of interior products, several of which are designed by your fellow architects. ***Rita F. Catinella, Products Editor***

WINDOWS KEEP HEPATITIS RESEARCH FROM GOING DOWN THE DRAIN

Traco didn't know the test its windows would undergo when it completed the replacement of close to 1,000 historic windows in five buildings of the historic Joan and Sanford I. Weill Medical College and Graduate School of Medical Sciences of Cornell University, New York City. Traco, which manufactures custom-designed residential and commercial windows and doors primarily for retrofit and historic renovation projects, worked in conjunction with Kilroy Metal Products to replace the windows of the entire medical facility.

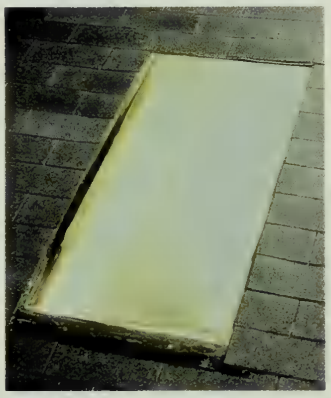
The test would come on July 14, 1998, when the city experienced a major water-main break that released 10 million gallons of water, flooding the streets surrounding the medical college. The water quickly rose three quarters of the way up the windows outside the biochemistry laboratory that researches hepatitis viruses, affecting the TR-9100 series windows at sub-street level.

When Dr. Hugh Robertson, of the biochemistry lab, heard the news of the water break, he was frantic, fearing for the safety of the equipment and the medicines. However, the Traco windows did not collapse under the tremendous water pressure, helping avoid a potentially disastrous situation for the school.

"The windows passed the second water test," said Tim Hartley of Cornell facilities development, when he informed Kilroy of the water break. Traco windows must first pass their own in-house water testing to meet industry standards.

Traco's specialized manufacturing processes include glass tempering, anodize and paint finishing, glass insulating, and aluminum extruding for windows and doors for commercial, institutional, high-rise, and low-rise buildings. Since 1943, it has replaced windows in some of America's most famous landmarks. 800/837-7002. Traco, Cranberry Township, Pa. **CIRCLE 200**

NEW SKYLIGHT INTENDED AS AN ALTERNATIVE TO ACRYLIC STYLES

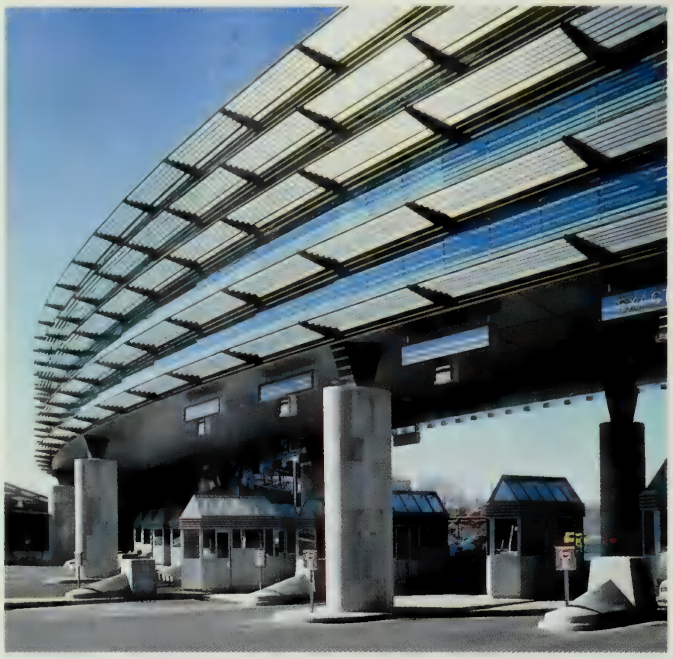


Velux-America Inc. has expanded its fixed skylight window offering with a new size, which it claims to perform better than the 30-by-30-inch types currently in use.

The new Model FS Fixed Skylight (FS 302), designed for out-of-reach installations, provides an economical way to capture abundant daylight for rooms in which maximum lighting is the only requirement, such as hallways, stairwells, and other closed-in, dark spaces.

The skylight was created as an alternative to acrylic skylights in new construction and to replace the estimated thousands of deteriorated 30-by-30-inch skylights across the country, says Gary Hyman, director of marketing. "These old-fashioned skylights, often the acrylic bubble type, are not energy efficient and are usually adhered to the roof with mastic or sealants that expand and contract with temperature changes, eventually causing the seal to break, resulting in costly leaks." According to Hyman, acrylic bubble skylights are likely to become cloudy, hazy, and brittle with prolonged exposure to the sun (above). Glass skylights do not react to the sun's rays like plastic, he adds.

As with all Velux roof windows and skylights, FS 302 meets the requirements of the Energy Star Windows program established by the U.S. Department of Energy and the U.S. Environmental Protection Agency. 800/283-2831. Velux-America, Greenwood, S.C. **CIRCLE 201**



▲ Somewhere over the rainbow
Wausau's curtain-wall systems are available with a variety of thermal barriers, glazing systems, and color-matched coatings. The curtain-wall systems also accommodate granite and metal panels for expanded design options. Shown here is a custom curtain wall for Niagara Falls' Rainbow Bridge. 877/678-2983. Wausau Window and Wall Systems, Wausau, Wis. **CIRCLE 202**

▲► Repeating history
The Richmond Mosque, Richmond, required Graham Architectural Products to replicate 330 ornate, original wood windows (above) in more durable aluminum, with high-performance insulated glazing. The windows are a combination of double-hung and casement windows, featuring springline transoms.

Also in Richmond, the Anheuser-Busch Brew-house historic restoration project required Graham to replace about 200 wood windows (below) with modern thermal versions, aesthetically indistinguishable from the originals. 800/755-6274. Graham Architectural Products, York, Pa. **CIRCLE 203**

► European favorite
Kolbe's Magnum Tilt-Turn window has the look of a traditional casement but features special hardware that allows it to operate as an inswing casement, a hopper, or both.

A favorite in Europe, the Tilt-Turn comes standard with ⅞-inch-thick insulating glass with argon fill. The Tilt-Turn is available with Kolbe's numerous division options, including true divided light. Kolbe & Kolbe Millwork Co., Inc., Wausau, Wis. 800/955-8177. **CIRCLE 204**

▲ Preapplied, prefinished
The Perma-Shield casement features a thicker frame, aligned grooves for easier extension jamb application on mulled windows, and a new long-track hinge. 800/426-4261. Andersen Windows, Inc., Bayport, Minn. **CIRCLE 205**

▼ Architectural jewelry
ThermoGold glass, with gold particles manufactured into the glass for improved thermal performance, is now available as a standard glazing option for all Weather Shield Legacy Series windows. 800/477-6808. Weather Shield Mfg., Inc., Medford, Wis. **CIRCLE 206**

▼ Hearing aid
Milgard's Sound Control series is a line of windows designed for sound reduction. Once a frame type has been selected, Milgard will build the windows with the precise glazing configuration that meets the customer's specific sound requirement. 800/MILGARD. Milgard Manufacturing, Inc., Tacoma, Wash. **CIRCLE 207**

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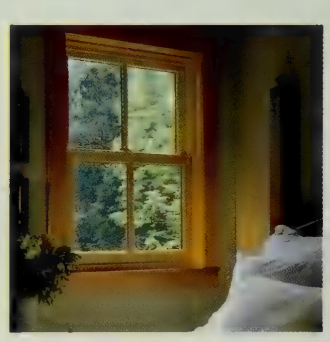
▲ From reps to rehearsals
Architect Michael Schnoering of New Jersey firm Ford Farewell Mills and Gatsch transformed Drew University's 1909 gymnasium into a theater. The design called for rehabilitating certain sections of the structure along with building a new addition. Pella duplicated the historic windows with an aluminum-clad window system that included the appearance of true divided light. A 25-foot-tall window-wall system (above) adds drama to the entry and lobby area. 800/84-PELLA. Pella Corp., Pella, Iowa. CIRCLE 208

▲ Warming up the kitchen
Handcrafted from Western Pine, Pozzi windows feature a four-step reveal and a clear wood interior that readily accepts paint or stains. Pozzi windows offer weatherproof, low-maintenance, aluminum cladding in 4 standard and 27 designer colors. 800/257-9663. Pozzi Window Company, Bend, Ore. CIRCLE 209

► Easier breathing
YKK AP America Inc. has introduced its new YES SSG Vent window system for commercial properties. This new system provides ventilation for storefront applications without adding the obtrusive sightline of a traditional window. It is available in casement outswing and project-out configurations with ¼-inch or 1-inch glazing. Screens are also available as an option. 800/955-9551. YKK AP America Inc., Atlanta. CIRCLE 210

◄ Single and on a budget
EFCO has added a single hung window with a 3¼-inch frame depth to its full line of windows, curtain walls, entrances, and storefront systems. Series 3400 is for schools and other projects where tight budgets are a concern. The window is available in commercial and heavy commercial ratings. 800/221-4169. EFCO Corp., Monett, Mo. CIRCLE 211

► Easy to stain, easy to clean
Marvin has replaced the jamb liner in the new Marvin Clad Ultimate Double Hung Window with a wood interior that can be painted or stained and that makes the window smoother to operate. With a flick of the wrist, the user can tilt the bottom sash for easy cleaning. Marvin Windows & Doors, Warroad, Mich. 888/537-8269. CIRCLE 212



◄ Finish colors added
Eagle Window & Door has introduced 6 new standard colors: antique white, sandstone, cinnamon toast, slate, country blue, and harbor mist. This makes a total of 10 standard exterior finish colors offered in Eagle's line of aluminum-clad windows. Eagle also offers 40 designer colors, including a range of pastels and earth tones. 800/453-3633. Eagle Window & Door, Inc., Dubuque, Iowa. CIRCLE 213

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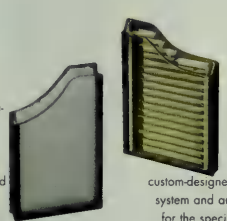

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CIRCLE 75 ON INQUIRY CARD

▼► From modern to Gothic

Kawneer's 1600 Slope Glazing (S.G.) provides the performance of a curtain wall in a monumental slope system (below). The stick system is fully factory fabricated, and the flush grid exterior has a narrow 2½-inch sightline with a variety of rafter depths and standard silicone glazed purlin. 1600 S.G. accepts infills ranging from 3/16 of an inch to 1 15/16 inches and handles inside and outside corner applications.

Kawneer's Sealair 6200 Thermal and 5200 Non-Thermal Windows (above) provide performance with cost effectiveness. Available as fixed, projected, casement, and drophead, options include factory glazing and dual or triple glazing with or without venetian blinds. 770/449-5555. Kawneer Company, Inc., Norcross, Ga. **CIRCLE 214**

▼► Making gym class brighter

When the Alexander Dawson School in Lafayette, Colo., needed a new gym, they hired Hutton Ford Architects to design a 29,000-square-foot building that would allow for future growth. The firm knew right away that they wanted to daylight the lobby and the entire length of the main corridor.

"We did not want the appearance of individual skylights, but rather the effect of being open to the sky," says Hutton.

The system is a structural composite sandwich panel formed by permanently bonding fiberglass-reinforced translucent faces to a grid core constructed of interlocked, structural I-beams. Kalwalls' light properties deliver balanced daylight while eliminating harsh glare, hot spots, and shadows. 603/627-3861. Kalwall, Manchester, N.H. **CIRCLE 215**

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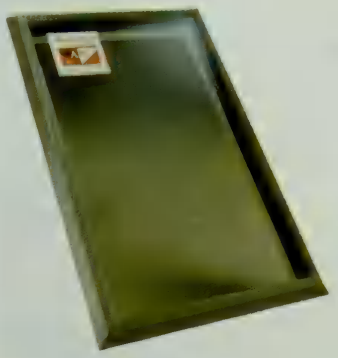
► Leaving in a hurry?

The Roto Roof Door turns upper-floor rooms into bright living space while meeting emergency egress requirements for windows. The Roto Door claims to be the only egress unit that opens from the side like a standard door. The door can be open in three positions; either fully open or in one of two partially open ventilating positions. 800/243-0893. Roto Frank of America, Inc., Chester, Conn. CIRCLE 216



◄ Installation in a snap

The new Andersen skylight with the snap-in sash features simplified roof brackets and a separate frame and sash for easy handling and quick installation; a response to installers' common concerns. The skylight features 12 standard vertical sizes, ranging from 16 to 44 inches wide and 27 to 72 inches long. Custom sizes are also available. 800/426-4261. Andersen Windows, Inc., Bayport, Minn. CIRCLE 217

▼► Illuminating designs

The new Vista 14-inch tubular skylight from ODL features an improved Solar Lens Dome (below). Able to spread light evenly up to 300 square feet, the strong, UV-resistant, acrylic-domed skylight offers clarity and scratch resistance.

ODL has also introduced a new Solar Flair diffuser accessory with four designs (right). The 22-inch diameter diffuser fits ODL's 14-inch tubular skylight creating a different type of natural lighting experience.

The design flares away from the ceiling, allowing sunlight to illuminate the diffuser while casting a warm glow on the ceiling. The etched blue cone accent can be positioned as a pendulum from the diffuser or inverted for two different looks. A pierced aluminum disk set in the diffuser gives a night-sky constellation appearance. 800/253-3900. ODL, Zeeland, Mich. CIRCLE 218

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—Vince Irwin, Irwin Products, Inc., St. Louis, MO

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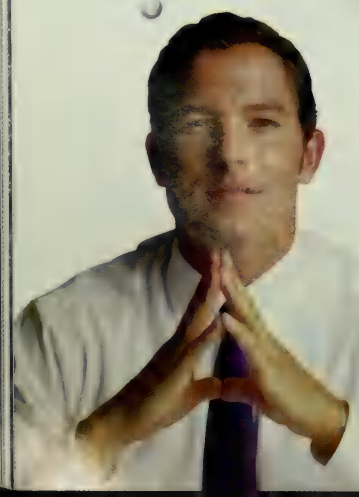

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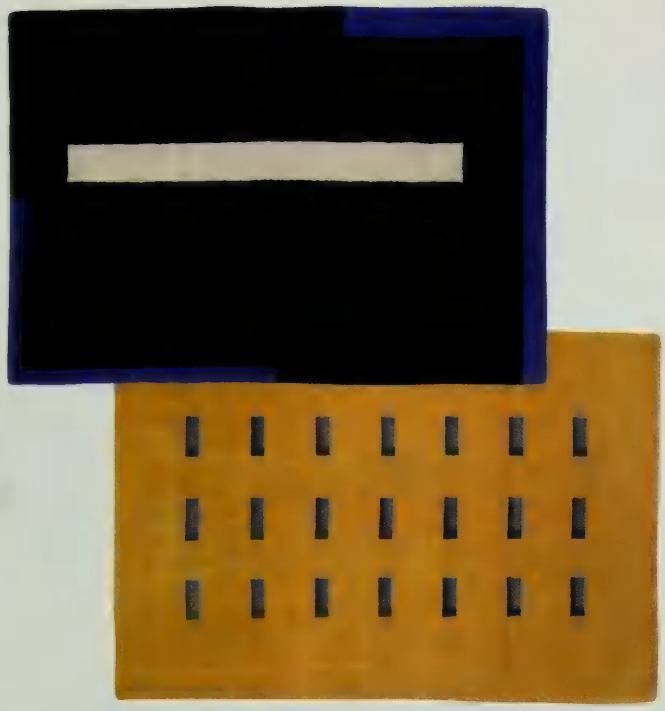
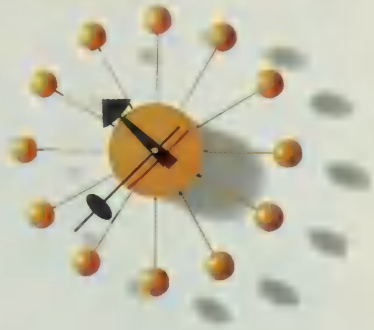
PRODUCT BRIEFS

► Translating Tibet

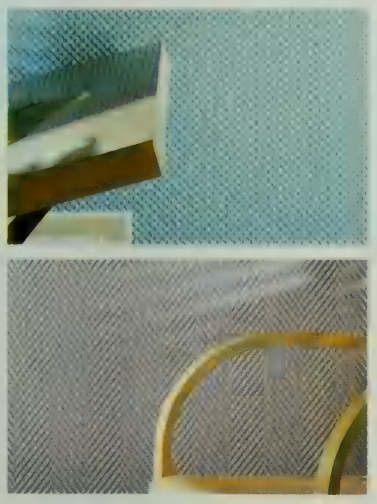
"Tibetan Modern: The Architects Collection" is a collaboration between world-renowned modern architects and master Tibetan rug weavers in an exhibit and collection of custom-designed rugs. Architects involved in the project include Steven Holl, AIA (top rug shown), Michael Rotondi, FAIA, and Paulett Taggart, AIA (bottom rug shown), all of whom produced designs reflecting their own interpretations of Tibet. The exhibit will premiere in Manhattan at the Tibet House Gallery on October 7 and remain on view until the end of the month. It will then go to San Francisco's LIMN Gallery, where it will be from November 19 to December 31. A limited number of each design will be produced, and a portion of the proceeds will benefit the Tibet House New York. 415/441-6604. Elson & Company, San Francisco. **CIRCLE 219**





▲ Time for a comeback

The Vitra Design Museum has reissued George Nelson Wall Clocks originally designed between 1948 and 1952. The Ball Clock (shown) was originally created for clock manufacturer Howard Miller and appeared in countless advertisements depicting the modern kitchen. Produced in the U.S. until the mid-1970s, the clocks will be available through the Vitra Design Museum Collection and at museum stores nationally, including MoMA in New York. 212/539-1900. Vitra, Inc., New York City. **CIRCLE 222**



◄ New type of glass wall

Johns Manville has introduced Textura, a new glass textile wall finish system, to the U.S. and Canadian markets. It is manufactured from the fine glass yarns that are spun from quartz sand, soda, lime, and dolomite. The line of paintable wallcoverings, which has been used extensively in Europe for 40 years, is resistant to fire, and creates minimal toxicity in fire situations. Its ability to breathe minimizes potential for the growth of mold and mildew. 303/978-2000. Johns Manville Corporation, Denver, Colo. **CIRCLE 220**

▲ Stretch your imagination

A laterally suspended textile system, Eurospan, features a locking knit-weave manufacturing technique that assures stability and strength when stretched into place. An option for ceiling coffer areas, large floating clouds, domes, and barrel vaults, Eurospan is made from 100 percent Trevira CS fibers, which are permanently flame resistant and impervious to moisture and humidity. Eurospan comes in white and is difficult to distinguish from white plaster or drywall. Cost competitive with other custom acoustical panels and systems, Eurospan may be field painted with a special colorant without diminishing acoustical performance. Eurospan is appropriate for commercial and residential renovation or new projects such as offices, hotel corridors, and schools. 303/466-3700. Wall Technology, Broomfield, Colo. **CIRCLE 223**

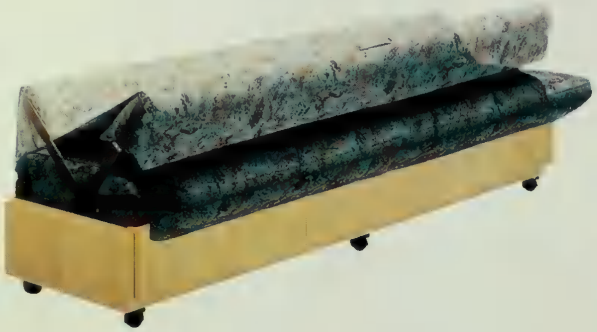
► Docking dining furniture

The Integrated Dining Collection from Robert Martin Designs features an expandable dining table that docks with a versatile, sideboard/desk (shown). All pieces can be executed in cherry, walnut, ash, or maple (other woods are available upon special request) and feature brushed aluminum hardware. The sideboard on its own measures 72 inches long and 24 inches deep; two retractable leaves increase its width so it can be docked with the table. 718/797-1183. Robert Martin Designs Inc., Brooklyn, N.Y. **CIRCLE 221**

PRODUCT BRIEFS

◄ Naturally (insect) repelling

K5's natural woven twine is made of 100 percent linen and is crafted in France. The primary uses of the three patterns shown below are for alternative looking heavy-duty upholstery, wallcoverings, and residential floorcovering. K5, the designer, manufacturer, and importer of the fabric, recommends backing for every application. This eco-friendly product has the interesting property of being naturally insect repellent. The material is available 58 inches wide. 212/953-5245. K5, New York City. **CIRCLE 224**

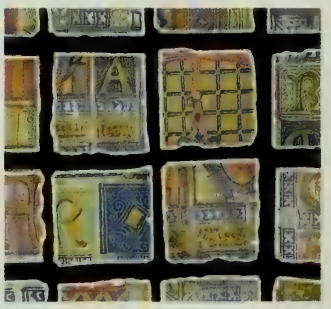


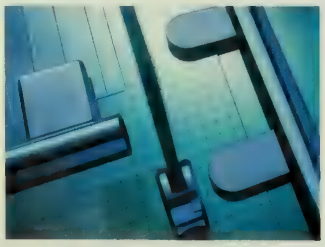
▲ Sleeping easier

The award-winning ADD Day Bed simplifies hospital furnishings and maximizes space by replacing freestanding and space-consuming sleeper sofas and recliners. Developed in conjunction with Northwestern Memorial Hospital in Chicago, the bed is now in use in every patient room in the hospital's new facility. Made of heavy steel construction, the Day Bed converts a 22-inch-deep sofa or window seat to a 30-inch sleep surface, employing a backrest that flips forward in one easy motion. 800/424-2432. ADD Specialized Support Technology, Inc., Los Angeles. **CIRCLE 225**

▲▼ Ancient inspirations

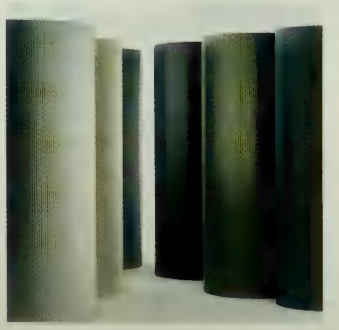
Since the 16th century, when artists traced designs into a wax coating on copper plates to reveal their imaginations, the Acquaforte, or acid-etching technique, has been used to design artwork. Handcrafted in Italy, the Akros collection of stone tiles applies the ancient technique to etched marble. Akros may be used in small quantities in 3-by-3-foot, 8-by-8-foot, or 16-by-16-foot tiles as decorative highlighting to a floor or wall, or, as in the application above, mixed with polished marble. The Illuminated Manuscripts ceramic tiles (left) are inspired by those books of prayer penned by monks centuries ago. Made in Italy, the tiles may be used as accents in a field of tile or may be concentrated for high-design impact. 212/727-9331. Artistic Tile, New York City. **CIRCLE 227**





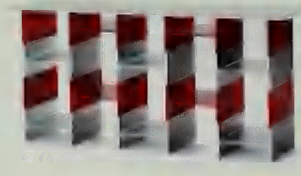
▲ German glass fittings

Bendheim is introducing a new line of German compression glass fittings. The clamps for glass shelving, stair railings, and partition walls are offered in a number of shapes, sizes, colors, and finishes including zinc, chrome, brass, and stainless steel. 800/835-5304. Bendheim, New York City. **CIRCLE 226**



◄ Y2K compliant textiles

With the feel of a SCUBA suit, Una (top) is designed to hug the contours of a chair or sofa. Designed by Suzanne Tick, Una features a pliable, solid-color fabric with a smooth matte finish, knit construction, and fiber content of 72 percent nylon and 28 percent elastin. Also from Tick is En Route (bottom), a solid-color, vertically ribbed wallcovering with a soft metallic sheen. Inspired by the type of vinyl used by the fashion industry for accessories, Tick has adapted En Route for the contract market and given it vertical striations and a palette of metallic colors, including aluminum and gunmetal. 212/343-4000. KnollTextiles, New York City. **CIRCLE 228**



▲ Building blocks

The i-beam credenza, part of the new stacking i-beam furniture line, is the work of husband and wife design team Stuart Basseches, an architect, and Judith Hudson, a graphic designer. The modular units are made from standard aluminum i-beam extrusions, and a pin connection system allows for the furniture to be easily taken apart and restacked in different orders or configurations. 212/255-3033. biproduct, New York City. **CIRCLE 229**

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BRIEFS

◄ Getting wired without coffee

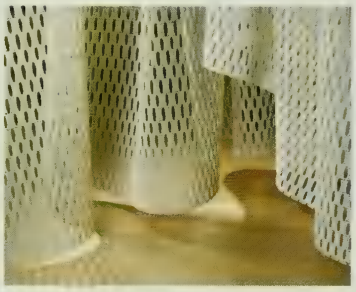
The WireWorks panel system was developed to make facility reorganization simpler and more economical. Panels can be taken out in the middle of a run, and assembly and reconfiguration are possible without special tools or fasteners. The panel is available in three styles: low-cost monolithic, stylish segmented, and stackable. All three provide ample interior space for storing excess cables. 800/424-2432. KI, Green Bay, Wis. **CIRCLE 230**

▲ Laminate it your way

To invigorate the field of laminate design, Wilsonart has brought together 22 artists and designers working in all areas of design—from textiles, architecture, and illustration to video and tattoo—to create a collection of radically new laminate designs. Designers who participated include ceramist Jonathan Adler, furniture designer Nick Dine, and industrial designer Karim Rashid. While in the past the high cost of developing a single laminate design meant that manufacturers had to sell millions of square feet of a single pattern to recoup their investment, Wilsonart Custom Laminate, with its state-of-the-art computer lab, allows customers to submit unique designs with no minimum order requirements. Laminates can be delivered within four to five weeks of design approval. 800/433-3222. Wilsonart International Inc., Temple, Tex. **CIRCLE 232**

► Technological knit

Techno, featuring a soft, matte surface and open-knit structure, is a new contemporary window fabric from Pollack & Associates. Knitted in Switzerland, Techno is inherently flame retardant, 118 inches wide, and available in three colors. 212/627-7766. Pollack & Associates, New York City. **CIRCLE 231**



CALL FOR ENTRIES

RECORD 2000 HOUSES

The editors of ARCHITECTURAL RECORD announce the 44th annual RECORD HOUSES awards program. This program is open to any registered architect; work previously published in other national design magazines is disqualified. Of particular interest are projects that incorporate innovative programs, building technologies, and use of materials. There is an entry fee of $50 per submission; please make checks payable to ARCHITECTURAL RECORD.

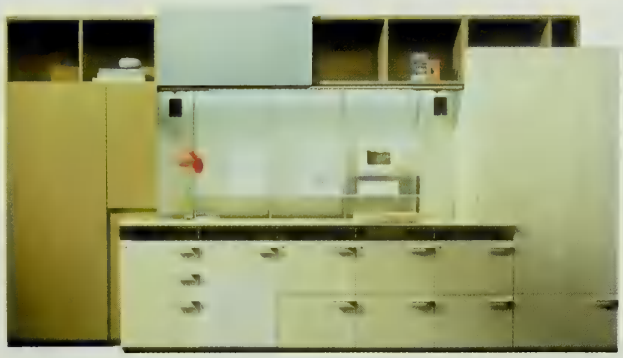
Submissions must also include plan(s), photographs (transparencies, slides, or prints), and a brief project description bound firmly in an 8½-by-11-inch folder, and must be postmarked no later than October 31, 1999. Winning entries will be featured in the 2000 RECORD HOUSES. Other submissions will either be returned or scheduled for a future issue. If you would like your entry returned, please include a self-addressed envelope with appropriate postage.

Submissions should be mailed to: RECORD HOUSES • ARCHITECTURAL RECORD
Two Penn Plaza, New York, New York 10121-2298

PRODUCT BRIEFS

▲ Accessorizing with leather
Coach, known for handbags and other leather accessories, has joined with Baker Furniture to create a collection that includes sofas, chairs, ottomans, and accessory items. The three-panel Coach Manhattan Folding Screen displays an exposed mahogany-finished frame, recessed hardware, and stitched glove tanned leather on both the front and back panels. 800/262-2411. Coach Furniture, Grand Rapids, Mich. CIRCLE 233

▼ Can't stand the heat?
Six new kitchen hoods from Cheng Design feature 16-gauge nonmagnetic stainless-steel construction, halogen lighting, and commercial stainless-steel baffled filters. Silex, shown below, features a factory welded off-set flue and apron, a wraparound utensil rail, and is designed to accept plaster finish. 510/849-3272. Cheng Design, Berkeley, Calif. CIRCLE 234



▲ Opening design options
Aperture is a new furniture system by designers Jordan Goldstein, ASSOC. AIA, and Jeff Henry. Henry is vice president of Gensler San Francisco and Goldstein is an architect and product designer in the firm's Washington, D.C., office. Aperture's main organizational element is created by the intersection of deep and shallow storage zones. The resulting frame can be tailored by combining different veneers and Halcon's Chemcolor finishes, creating unique compositions from catalog components. 507/533-4235. Halcon, Stewartville, Minn. CIRCLE 235

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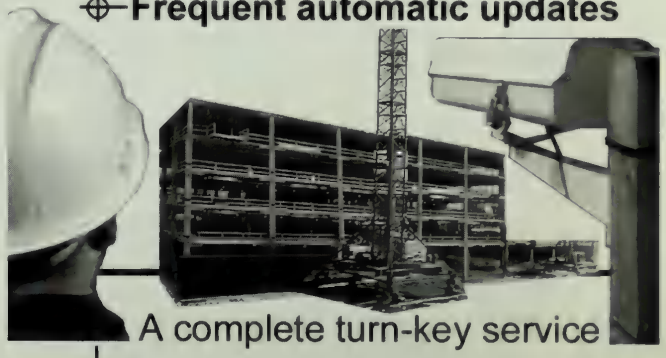

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PRODUCT BRIEFS

▼ Italian cooking

Snaidero offers three new kitchens redesigned for the new millennium by Ferrari stylist Paolo Pininfarina; Idea (shown below), Viva, and Ola. The streamlined, handle-free look of Idea, which has been in production for 15 years, has been completely rethought by Snaidero for modern purists. New colors and features, such as a seamless stainless-steel channel system with integrated finishing panels, a 120-centimeter drawer unit, and the absence of all ornamentation in the island cooktop, add to the model's design and functionality. A 15-centimeter-deep, aluminum worktop features a bottle holder, knife rack, utensil holder, and electrical outlets for counter-top appliances. 310/516-8499. Snaidero USA, Inc., Los Angeles. **CIRCLE 236**

◄ Alarming inspiration

Richard Gluckman, FAIA, Michael Graves, FAIA, Kisho Kurokawa, HON FAIA, and Laurinda Spear, FAIA, each contributed to Building Timepieces II, a collection of alarm clocks that draws inspiration from several famous museums around the world. Kurokawa's "Inspiration" clock is shown. 781/932-9444. Projects, USA, Woburn, Mass. **CIRCLE 237**

► Entering another dimension

The slip resistance of Marley Dimension sheet-vinyl flooring is enhanced by granules made from postconsumer waste, which toughen the surface and aid durability. A combination of opaque and pearlescent chips are suspended within a clear wear layer, providing a 3D effect. Dimension is available in 16 colors, has a built-in bacteriostat for added hygiene, and is intended for a variety of environments, from health care, education, and retail to hospitality and commercial kitchens. 800/633-3151. Marley Flexco, Tuscumbia, Ala. **CIRCLE 238**

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PRODUCT BRIEFS

▼ Alternative routes

Mobile T-screens. Warehouses. Shortbeds. The vocabulary of Detour's work systems might not sound familiar, but its influences are libraries, casual dress, and transportation. Detour creates open-space work settings of freestanding elements that can shift easily with the patterns of people and their projects for the changing directions of work.

Detour designed their system by observing several trends that share an impact on our work-lives, such as how casual dress reveals a cultural and demographic correlation between informal wear and informal work. For Detour's designers, success hinges on user-centered solutions that enable mobile workers to quickly acclimate themselves to temporary and unfamiliar work settings. 650/697-6790. Metropolitan Furniture Corporation, Burlingame, Calif.

CIRCLE 239

▲ Levitating meditation

Cherry Tree offers custom shoji screens in several American hardwoods and custom stains. The manufacturer can fashion custom-designed shoji for commercial and hospitality projects that have myriad of applications, such as window coverings, doors, freestanding panels, and room partitions. Shoji are available with a variety of grid styles, durable facings, and track mounts. The ceiling lattice (shown above) can enhance a suspended ceiling light in an office, restaurant, or home setting, creating a serene and soothing interior for visitors and staff. Facings are available in a variety of durable, yet translucent materials, from glass to acrylics. The ceiling lattice comes standard or custom-made in the U.S. from the finest hardwoods. 800/634-3268. Cherry Tree Design, Bozeman, Mont.

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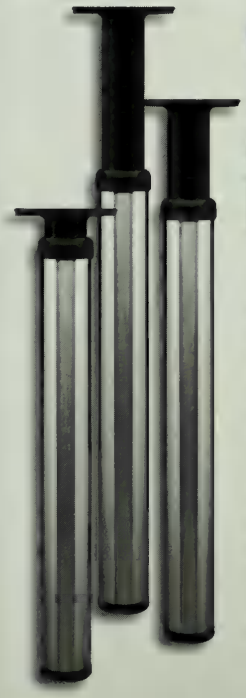

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PRODUCT LITERATURE

New furniture resource

Offering classic favorites as well as products new to the U.S. market, this direct-resource catalog sells reasonably priced, quality furniture that is in stock and can be shipped immediately. 800/944-2233. Design Within Reach, San Francisco. CIRCLE 241

Ductless fume-hood brochure

A new four-page brochure from Fisher Hamilton features the company's SafeAire Ductless Laboratory Fume Hood. 920/793-1121. Fisher Hamilton, Inc., Two Rivers, Wis. CIRCLE 242

Daylighting highlights

An eight-page brochure from Velux-America, *The Daylight Advantage*, highlights seven nonresidential projects throughout the country that have benefited from the strategic use of daylighting. 800/888-3589. Velux-America, Inc., Greenwood, S.C. CIRCLE 243

Decorative product brochure

A new brochure from Lightolier contains detailed descriptions of the decorative elements of the BowShield product line. 800/215-1068. Lightolier, Fall River, Mass. CIRCLE 244

Back-saving brochure

Dauphin's Ergonomics Brochure contains ergonomic research findings, combined with tips and an easy-to-use checklist summary. A new screensaver also provides educational training. 800/995-6500. Dauphin, Boonton, N.J. CIRCLE 245

NEW SITES FOR CYBERSURFING

Dura Art Stone:
www.duraartstone.com

North American Laminated Glass Information Center:
http://lgic.glass-info.com

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www.ardeelighting.com

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www.hunterdouglasceilings.com

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www.millworkstore.com

Polycoat Systems, Inc.:
www.polycoat.com

PPG Industries Coil and Extrusion Coatings Division:
www.ppgcoexcoatings.com

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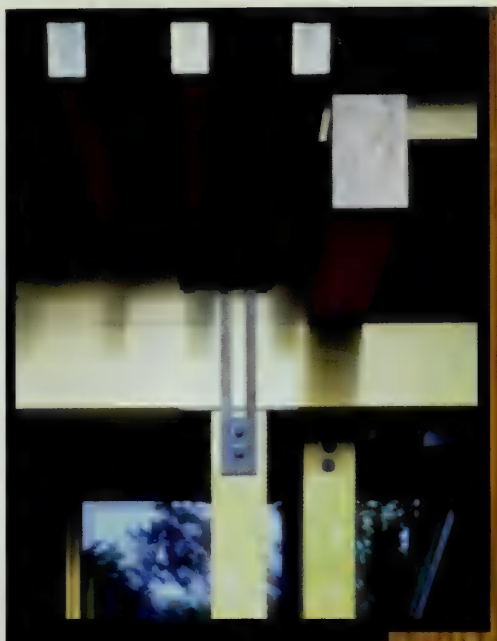

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PRODUCT LITERATURE

School lighting solutions

A new 24-page brochure from Holophane catalogs fluorescent lighting solutions to suit various schoolroom designs. 614/575-4240. Holophane Corporation, Columbus, Ohio. **CIRCLE 246**

Brick installation information

A brick installation package from the Brick Industry Association includes an instructional brochure on how to install a brick walkway, patio, and driveway, and a video on how to install a brick driveway. 703/620-0010. Brick Industry Association, Reston, Va. **CIRCLE 247**

Molding profile catalog

The MDF Moulding division of SierraPine has introduced a catalog containing over 175 profiles in their MDF molding line. 888/633-7477. SierraPine Limited, Roseville, Calif. **CIRCLE 248**

EIFS educational video

A free, six-minute educational video from Parex describes the features, benefits, and key installation steps of EIFS. 800/537-2739. Parex, Inc., Redan, Ga. **CIRCLE 249**

All-weather heater brochure

A new six-page illustrated brochure highlights the opportunities of the Suntube Compact Heater to provide safe, infrared comfort heating, indoors and outdoors. 800/223-5335. Solaronics, Inc., Rochester, Mich. **CIRCLE 250**

Stone project guide

A 24-page project guide includes a variety of interior and exterior projects with instructions for installing designer stone over any structurally sound surface. 800/295-6023. Vengeance Creek Stone, Murphy, N.C. **CIRCLE 251**

Concrete bridge deck report

A 12-page report, *Field Investigations of Existing and New Construction Concrete Bridge Decks*, compiles the results of extensive field investigation of existing and new construction bridge decks in Indiana. 847/517-1200. Concrete Reinforcing Steel Institute, Schaumburg, Ill. **CIRCLE 252**

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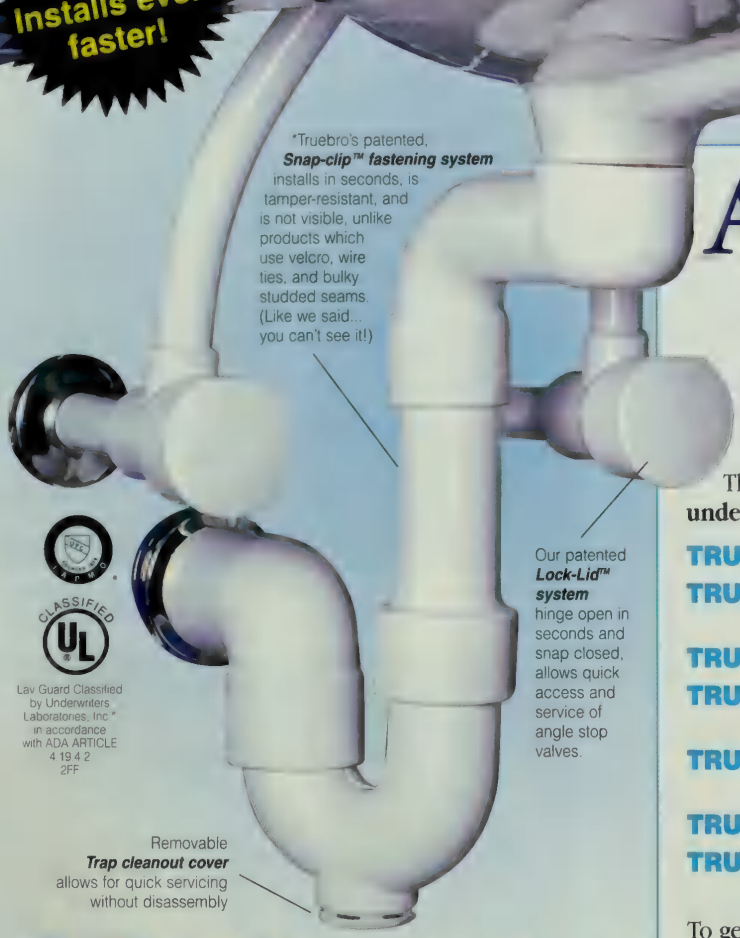

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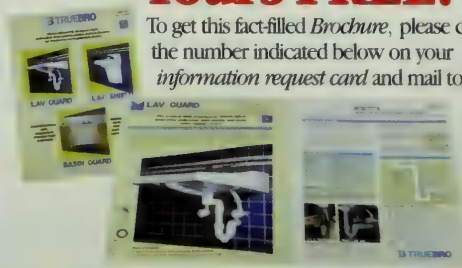

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ANSWERS

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1. Restaurants have evolved into a form of entertainment. They are part of a carefully concocted show in which the diners are the audience, the chefs are the stars, and the visible portion of the kitchen is the stage. Open kitchens provide suspense and action for the diners, through flashes of fire, the sounds of cooking food, and the chef's chopping skills. The trend started as a way for chefs to show off the freshness of their ingredients and the cleanliness of their kitchens.

2. Kitchen design is driven by the menu. The architect, chef, and/or owner analyze the menu and its requirements in detail. Every step of the food-preparation process is considered, from delivery of ingredients through cooking and serving. When deciding how much of the cooking should be visible, the architect must consider the budget. An open kitchen requires attractive finishes, which may increase costs 25 to 30 percent over those of a kitchen with simple service materials.

3. Architects must rely on a carefully assembled team that may include the restaurant owner, mechanical engineer, professional foodservice consultant or commercial kitchen designer, lighting consultant, interior designer, and chef. Consultants understand professional cooking and the flow of traffic in the kitchen. They advise the architect on the optimal layout of appliances, work areas, and sinks to minimizes the number of steps needed to prepare a meal. They also provide guidance in selecting shelving, countertops, appliances, and cooking equipment to meet the needs of the menu.

4. Commercial kitchens must meet health codes, which play an important part in the selection of materials. As a result, there are few choices. All surfaces must be nonporous, seamless, and easy to clean. Stainless steel is used for most countertops and sinks; ceramic-coated tiles are used for ceilings. Equipment is movable for cleaning under and behind it. Floors must be nonskid. The kitchen should be compact and efficient, making the work flow smooth. Design decisions come into play when deciding whether to have dishes on open shelves for easy access or to have them in closed cabinets that look neater but require more effort to reach.

5. Atmosphere is affected by lighting, noise, and ventilation. An open kitchen is a work area, so the lighting must be bright—but not so bright that it distracts from the dining experience. The hard surfaces required in the kitchen area increase noise levels. Sound-absorbing materials such as upholstery, linens, and carpet in the dining area reduce noise. Kitchens produce gases, high temperatures, smoke, odors, and humidity that must be expelled. The cooking area usually has a canopy over it to pull the hot air up and out. Ventilation must be specified correctly to avoid drafts.

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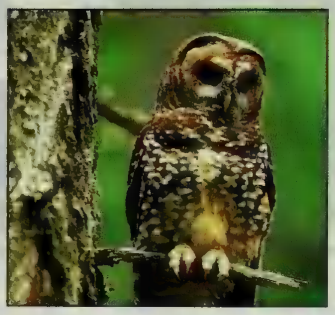

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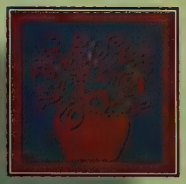

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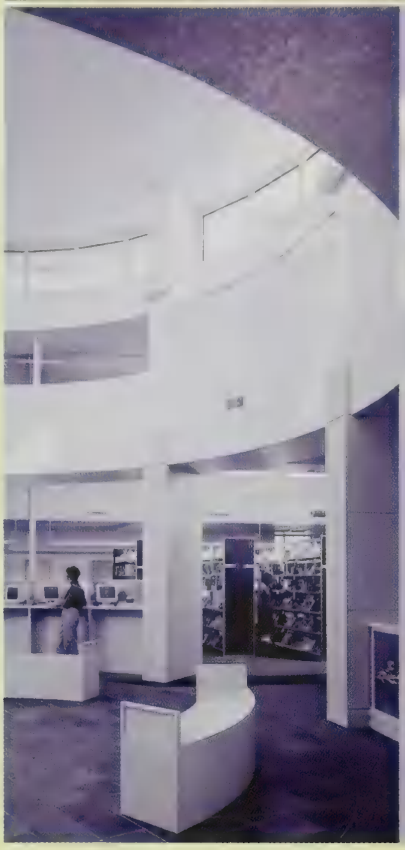

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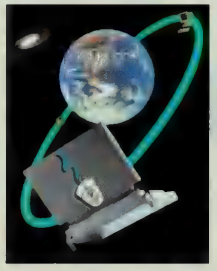

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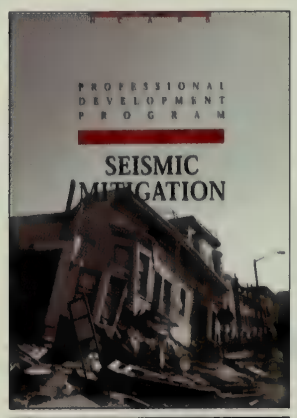

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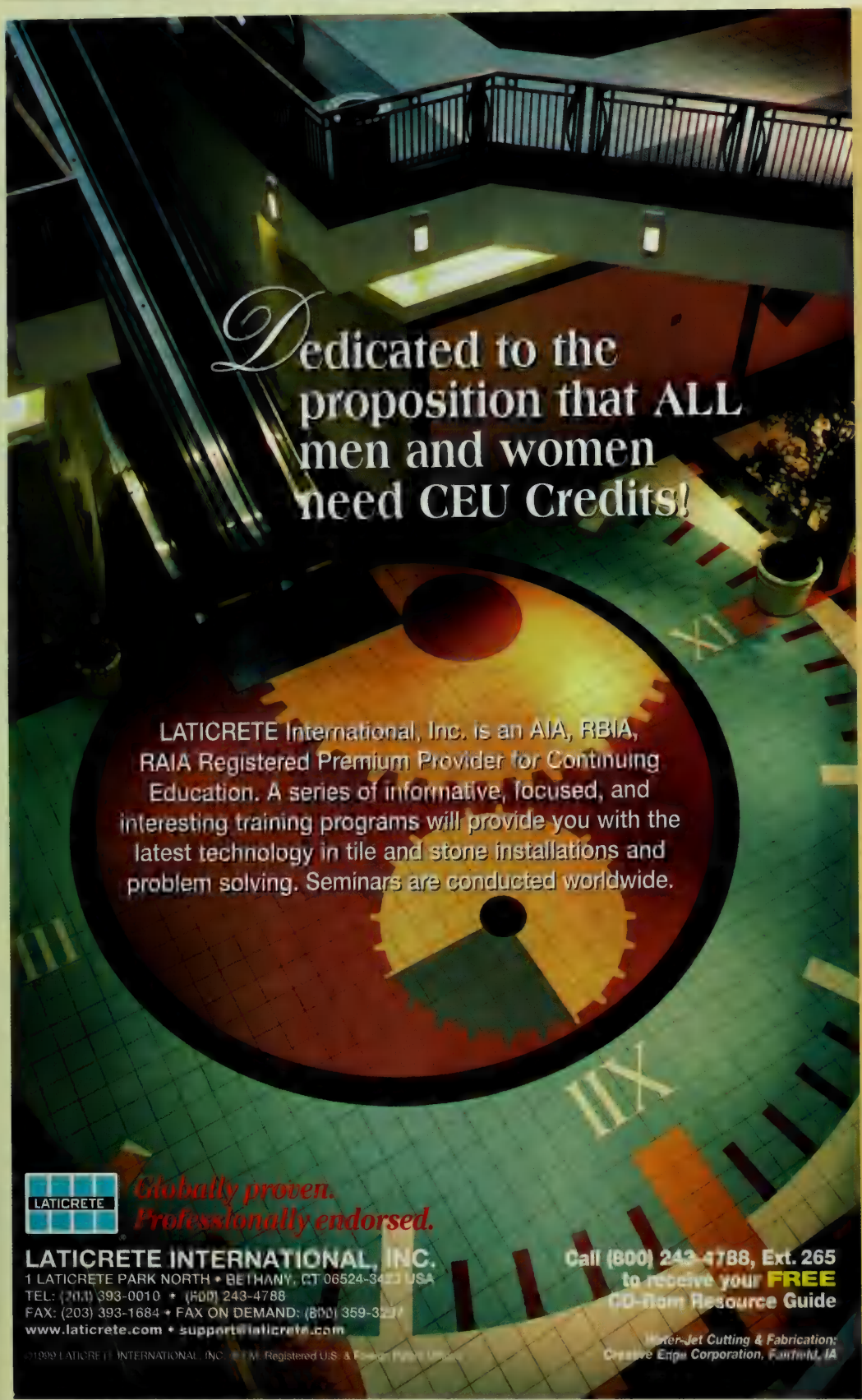

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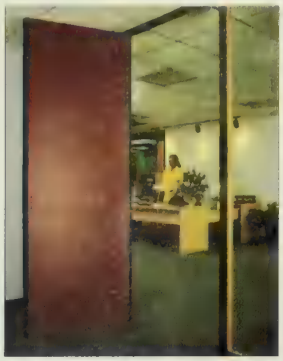

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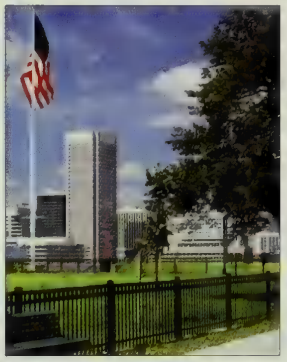

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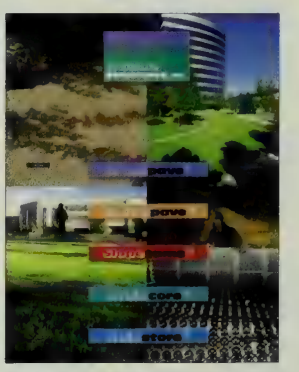

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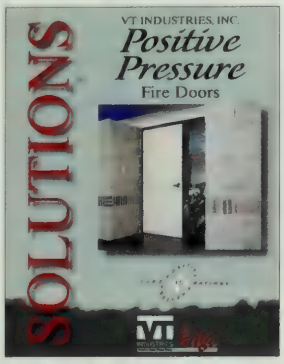

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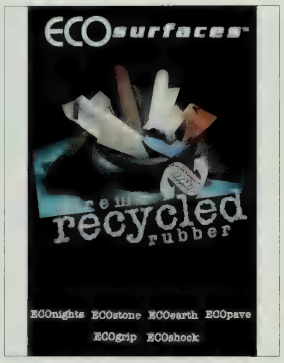

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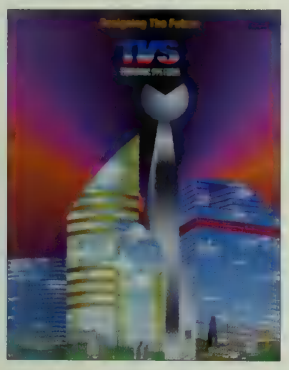

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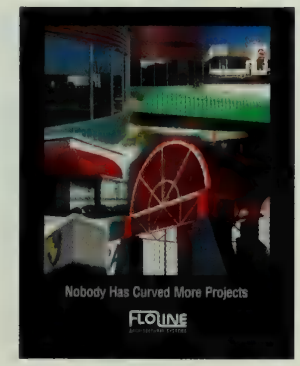

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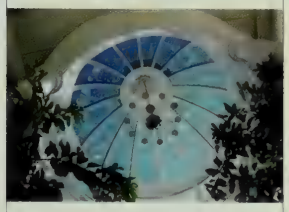

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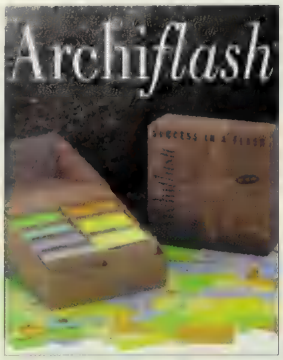

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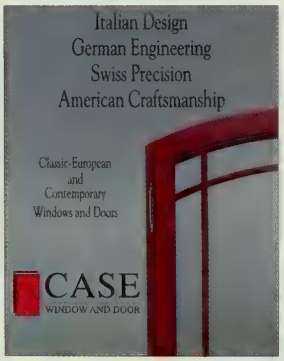

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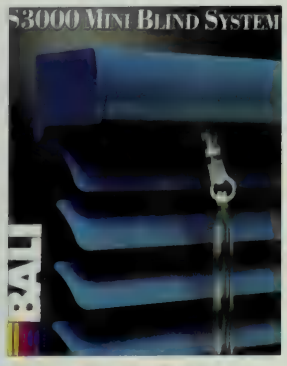

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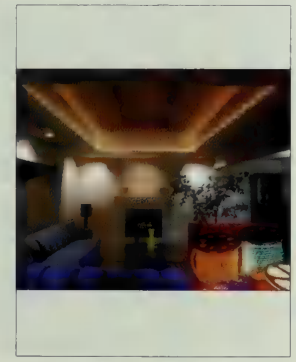

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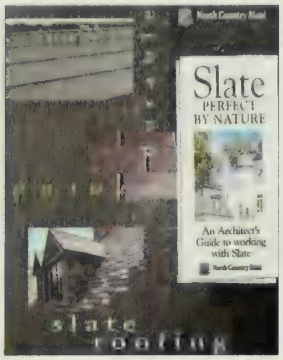

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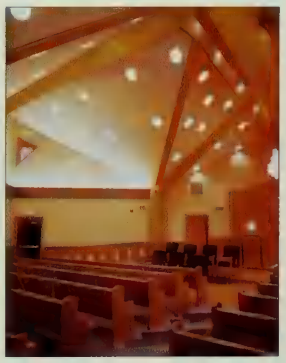

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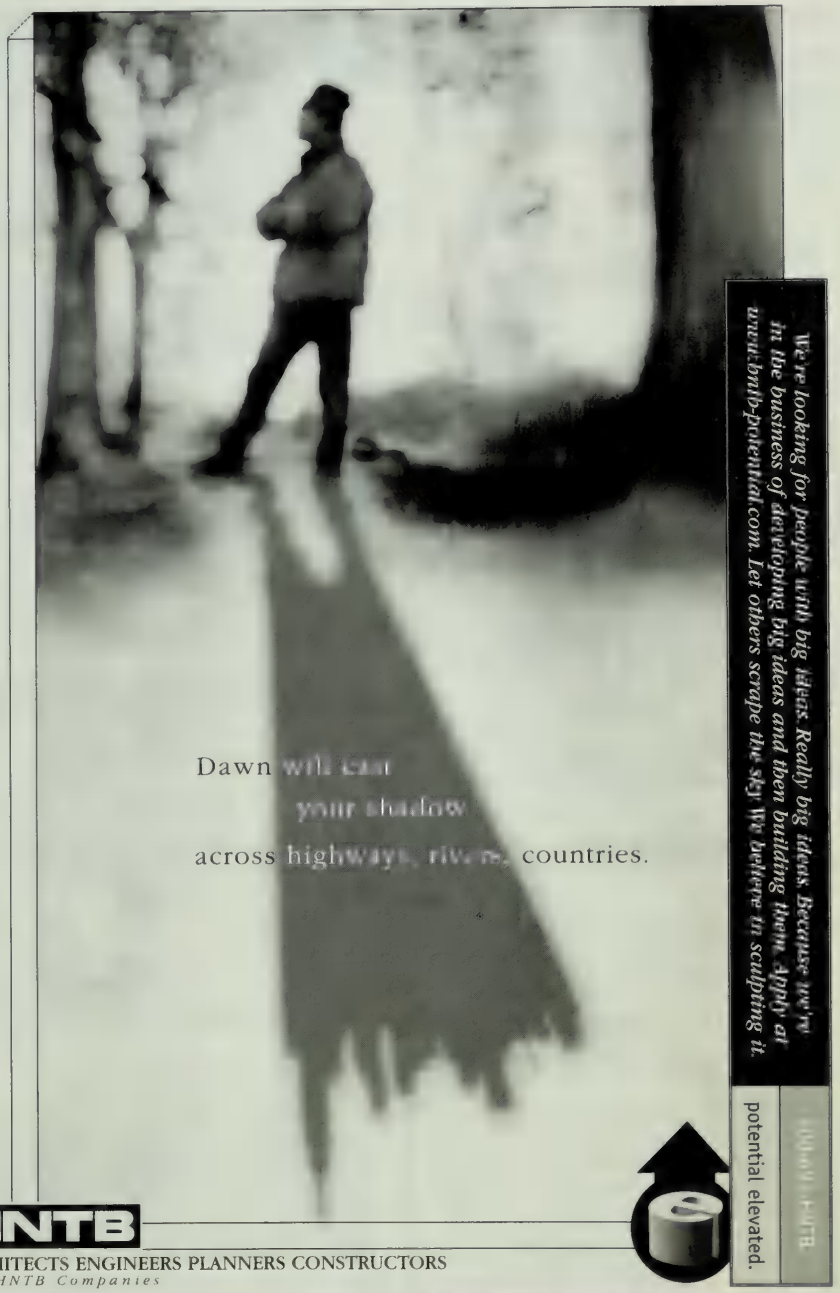

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The educational component will be comprised of teaching in the environmental systems technologies area in concert with CERES staff. The content areas covered in the existing environmental systems courses include the traditional subjects required for NAAB accreditation of the Department of Architecture curriculum. New initiatives in modularized teaching-a distribution of environmental control systems teaching across the degree program-are being developed. The successful candidate will be expected to contribute to and participate in this effort. Responsibilities may include teaching architectural design studio.

On-going developments such as the clustered minors in environmentally sustainable practices, the biannual Greening of the Campus conferences, the use of electronic media in the delivery of environmental systems content, and the development and maintenance of the ongoing visiting scholars program represent some of the CERES initiatives structures to link research and education and to foster interdisciplinary energy-related environmental systems research/education/service. The successful candidate will be expected to contribute to the implementation of these initiatives as well as the development of new interdisciplinary programs. Exceptional facilities, abundant technological resources, unique university positioning, substantial indirect support and summer employment options make this opportunity very attractive.

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Send letter of application; curriculum vitae; three letters of recommendation; and samples of professional, creative and/or academic course work to: Search Committee, Center for Energy Research/Education/Service, Ball State University, Muncie, IN 47306. (Tel: 762-285-1135; Fax: 765-285-5622) Nominations are encouraged. Review of qualifying applications will begin September 15,1999, and will continue until the position is filled (www.bsu.edu/ceres) (www.bsu.edu/cap/arch.html)

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The successful candidate will qualify for an appointment as full professor with tenure in one of the academic units in the College.

Anticipated starting date July 1, 2000. The salary is competitive and commensurate with experience and qualifications. The deadline for nominations is **October 15, 1999,** and the application deadline is **November 1, 1999**. Applicants should send a letter of interest, a curriculum vitae, and the names and contact information for five references to:

Dean Donald E. McGlothlin, Chair
Search Committee:
Dean, College of Architecture
University of Florida
C/O Lynne Collis
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THE FUTURE Consumers are buying goods on the Internet in growing numbers. Will E-commerce doom retail architecture?

BY B.J. NOVITSKI

If shoppers begin to rely more on the Internet than on their local mall, will architects who depend on retail design feel the pinch? According to the AIA's *1997 Firm Survey*, nearly 8 percent of firm billings come from retail construction. If predictions about the increase of online sales come true, firms that specialize in the retail sector could suffer. But lessons learned from E-commerce can also mitigate its potential negative effects on practice.

The trend began with Amazon.com (www.amazon.com), which was unknown when it started selling books on the Internet in 1995. Today, just four years later, it's one of the biggest booksellers in the country. Egghead Software, a popular computer products retailer, once operated a national chain, but closed all its stores, opting for just its online address instead: www.egghead.com.

Hundreds of electronic storefronts sell everything from Aegean cruises to Zen alarm clocks. According to the online newsletter eMarketer (www.emarketer.com), sales volume of E-commerce were estimated at $1.8 billion in 1997; by 2002, they're expected to reach $26 billion. It's no wonder considering the convenience, product choice, discounts, and security E-commerce can offer consumers.

Notwithstanding the impressive numbers, online book sales captured a mere 3 percent of that market last year. Robert Murray, of F.W. Dodge, who prepares five-year forecasts of the construction industry, notes that despite more frequent predictions that online shopping will render built stores obsolete, 1998 saw the highest level of store construction ever.

"This year," he notes, "there's a 5 percent decline from that all-time peak, but this sector is still very healthy by historical standards. Online shopping may have had some dampening effect, but retailers are competing to differentiate their offerings and replacing a lot of outdated, 25-year-old space."

How long can that building boom continue? Futurist Graham T. T. Molitor, president of Public Policy Forecasting and vice president and legal counsel of the World Future Society, projects the growth of E-commerce to continue exponentially. He expects it to approximate that of interconnected computers, which numbered 500 in 1983 and will likely reach 500 million next year. Despite this growth, he argues, bemoaning the loss of retail outlets is like lamenting the loss of the elevator operator. True, unemployment will result in some areas, but this won't necessarily mean a net loss of work.

Delivery services, for example, will boom, along with the built infrastructure to support them. He predicts an increase in demand for stores that offer never-out-of-stock, frequently purchased items and stores that have high-volume, highly specialized products. Other building types will grow in importance. Molitor cites huge, state-of-the-art warehouses, such as those that enable Amazon to ship most popular books from on-hand stock. He also believes there will be increased demand for planned cities built on what is now inexpensive rural land, distant from existing cities. An increase in telecommuting and, eventually, high-speed rail and automated highways will make these communities feasible.

Designing innovative building types will help architects compensate for some loss of retail construction, but there are other options, too. Already, some architects are exploiting the E-commerce trend by creating firm Web sites that display their digitized work and advertise their services. Of course, high-priced professional services do not sell as readily as consumer products, but the effectiveness of these sites will probably increase as potential clients become accustomed to going online to find what they need.

Information packager VISCOMM has developed an architectural front end to a door manufacturer's product information.

In addition, some architects are finding work applying their sorely needed design skills to E-commerce sites, using the metaphor of physical space as an interface to information. In one recent example, VISCOMM, which maintains and distributes information to the design and construction community, has developed a roomlike interface for information about Weyerhaeuser Doors. The architect or homeowner navigates the site by clicking on posters, doors, and other icons that lead to different types of data. Although such an interface might tax today's typically low-speed Internet connection, it offers clear wayfinding based on a relatively universal understanding of spatial cues.

Finally, architectural practice itself will change. Architect Peter Anders, author of *Envisioning Cyberspace* (McGraw-Hill, 1999), has coined the term *cybrid*, meaning a hybrid of cyberspace and real space. Business owners wanting to replace some real estate with online operations can hire an architect to design a Web site and building as a single package, creating resemblances between real and digital environments that can help employees find information online. Although Anders doesn't yet have statistics to prove this, he argues that a cybrid makes better financial sense for a client than a building alone. But for architects to get paid for these services, they'll have to negotiate fee creatively, basing them on more than built square feet. In the future, clients will pay E-architects to build less. ■

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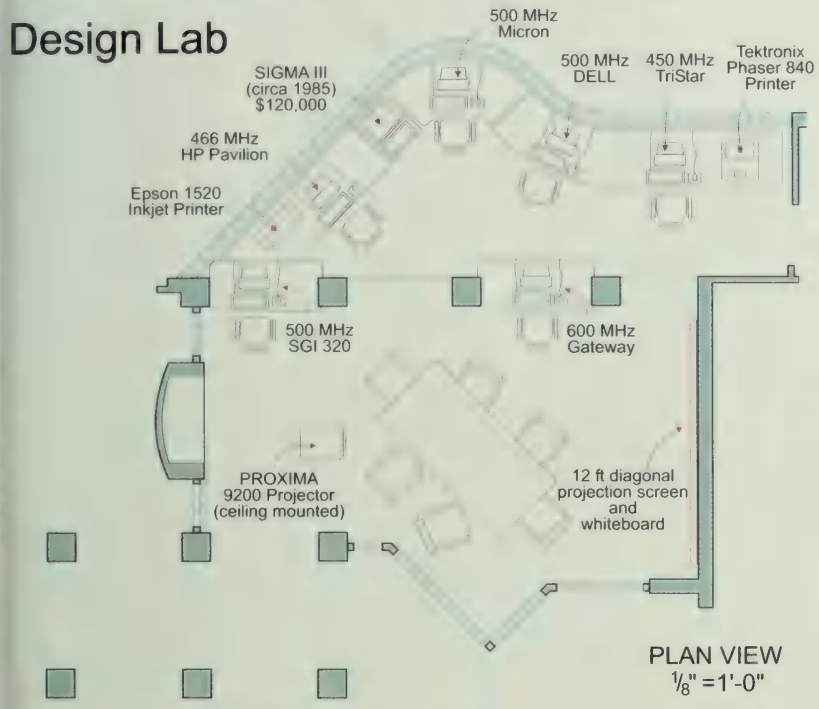

21st Century Design Lab

by Charlie White, AIA

Our firm has been using computers as an integral part of our office organization and production system for 15 years. This past year we have seen significant advances in computer technology. Both hardware and software have become more effective and more affordable. In response to these changes we have created a new space for our architectural firm that we have designated as our Design Lab.

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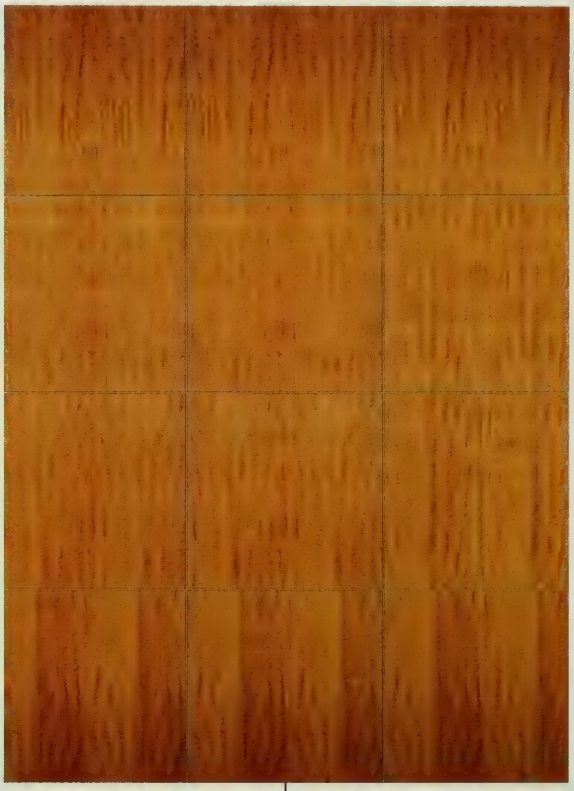
Natural instincts



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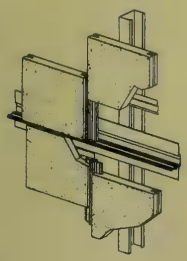

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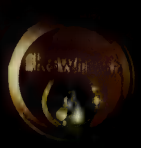

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CIRCLE 8 ON INQUIRY CARD

EDITORIAL

Lost in Space

BY ROBERT A. IVY, FAIA

Graduation from architecture school can feel like launching into space from the mother ship. Suddenly jettisoned from the warmth of a familiar support system, you feel keenly alone, free floating toward a profession and a new life while the next landmark lies three years away, beyond the visible horizon. You bear the new name "intern" uneasily; moreover, the guideposts shift along the way. The intern's and the young architect's plight is reminiscent of Mel Brooks' 1977 classic High Anxiety.

It's no joke. New graduates face a bewildering array of choices armed with too little information and support. Like the spacewalker, their connections to the profession are tenuous, leading them to feel alienated and disaffected from architecture itself—an unacceptable situation, all the more ironic in a prosperous economy. When the profession requires the talents of every available architect, we need to ask, "What is going wrong?"

Schools of architecture should take some of the heat. Recently, our own straw poll reiterated a disjunction between academia and the workplace ["Back to School," page 112, September 1999]. We found that 53 percent of respondents agreed that schools failed to prepare them well for real work. While most architects cherish the critical freedom that lies at the heart of architectural education, somehow students do not grasp the distinctions between design studio and the workplace until very late in their training. AIAS President Melissa Mileff explains, "You're not trained to be an intern."

The gap widens. Increasingly, graduates find jobs outside traditional practice as model makers, cyber-designers, or builders. Who explains the options to these vocational pioneers? Very few schools offer extensive work/study programs, like the University of Cincinnati does, or active job placement, as the University of Nebraska does. Realistic expectations about what they face would mitigate the graduate's disillusionment.

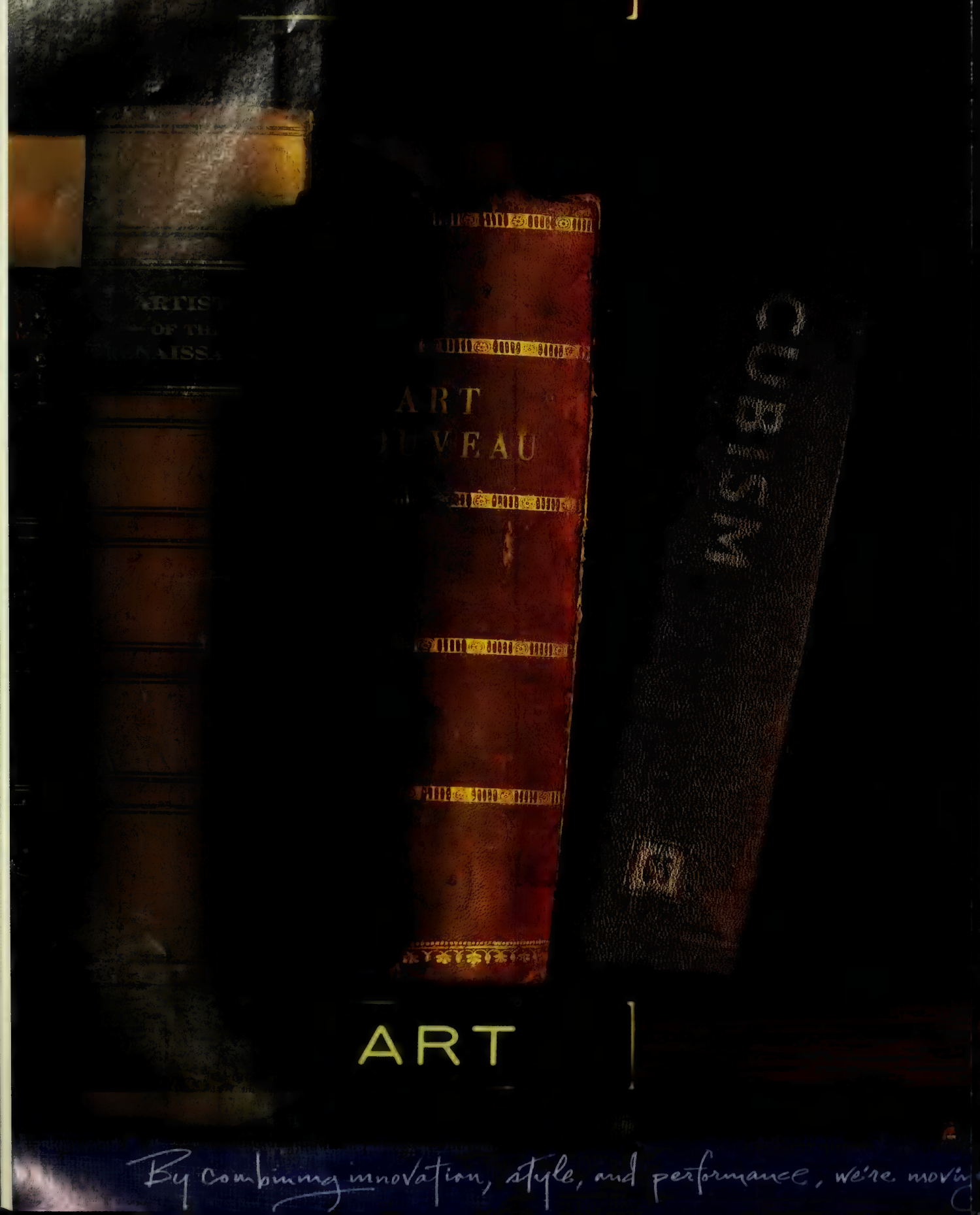
Practicing architects don't get off the hook. Too many practitioners are out of sync with the culture at architecture schools and, therefore, with the labor force. Desperate for workers, principals gobble up young computer jockeys before they've framed their diplomas: The kids may lack information or experience in how buildings go together, but they can draw like demons.

The Intern Development Program (IDP), which promised so much, seems to be floundering. Despite the idealism with which it was founded and the many volunteer hours devoted to the program, author Lee Mitgang reported in our July issue that architects in training sometimes cheat when filling out training reports, sometimes with the "complicity of their employers." This shocking and cynical state of affairs demands careful investigation and correction, but it offers strong commentary on interns' attitudes. Some obviously consider IDP criteria a hindrance rather than a help.

NCARB has already called for a task force to deal with the issues raised at the April 1999 Internship Summit held in Louisville. The summit, which engaged leaders and new graduates from the American and Canadian architectural communities, should be a foretaste of broader dialogue, as we all work to unravel the knots in the system.

It may sound hopeless, but the situation for interns and young architects contains good news, including a backlog of ample work. Enlightened firms like Gresham Smith and Partners of Nashville are looking beyond the quick fix and are investing in internal training, with firm principals leading sessions on leadership and other topics for new recruits. The volume of national debate on the internship dilemma is increasing as well.

While the heat is up among individuals, firms, and institutions, we are far from resolution. The stakes are too high for carping or backbiting among the stakeholders where the future of architecture is concerned. Interns and young architects are free-falling, when they deserve a lifeline.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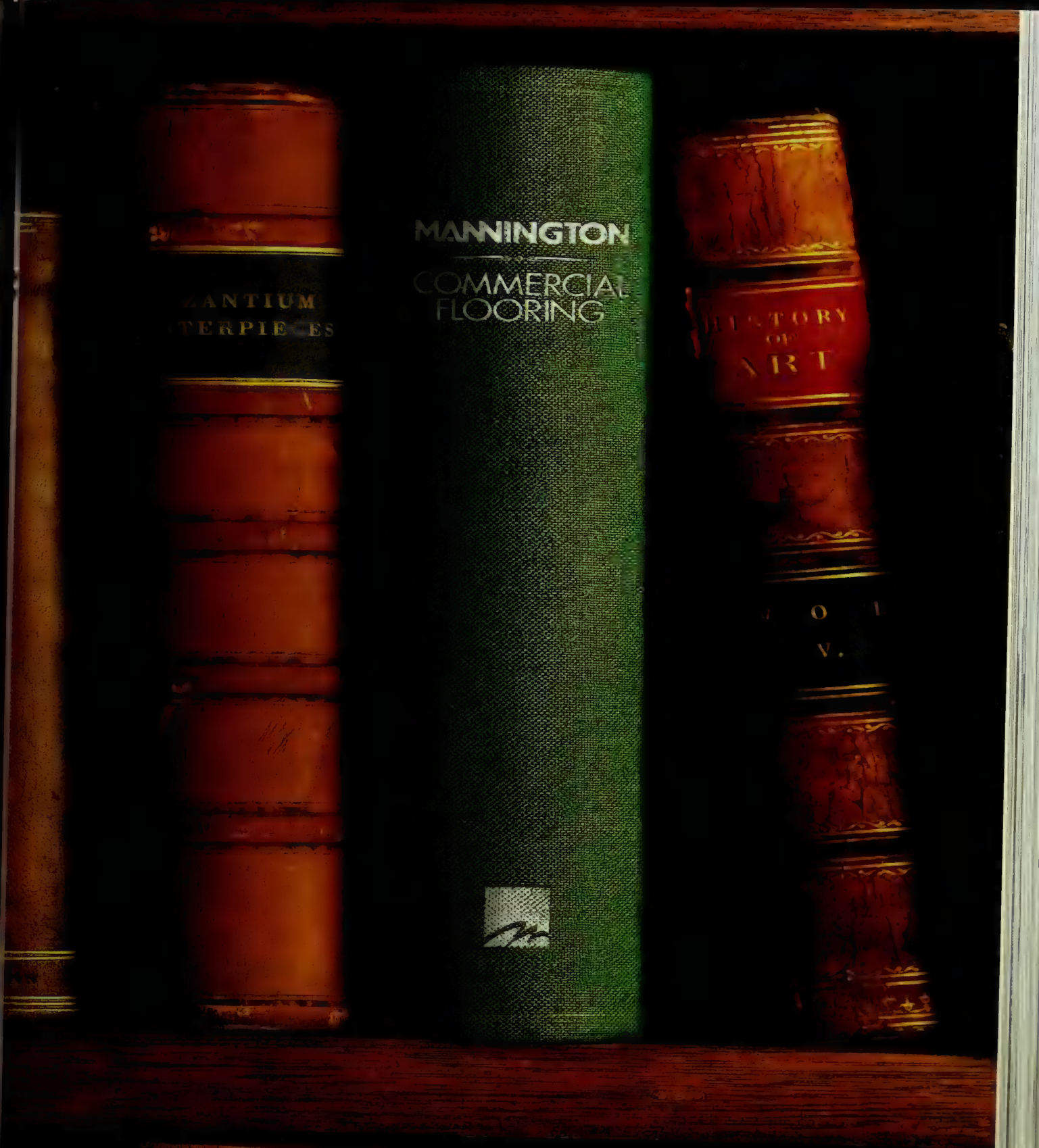

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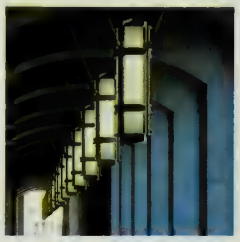

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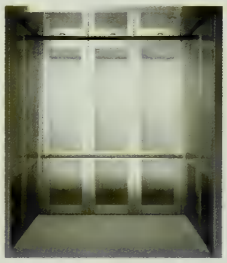

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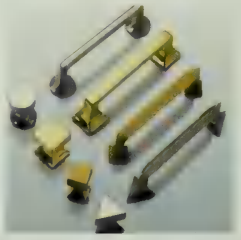

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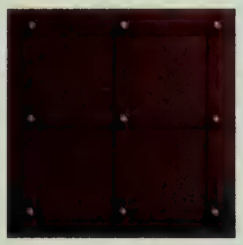

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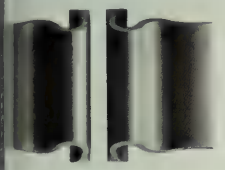

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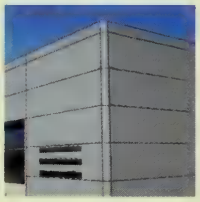

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Lisa Black, director of administration with the building owner, Pacesetter, Inc., agrees.

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CIRCLE 11 ON INQUIRY CARD

LETTERS

Unpolitically correct?

It seems that Robert Benson [Critique, September, page 49] feels the architecture profession is "callously" failing in its obligation to promote his socialist political agenda.

Fortunately, he has a three-part solution for this problem: "change the way we teach design," "demand critics ask penetrating questions," and "seat incisive boards . . . and commissions." In short, indoctrination, vilification, and regulation.

This condescending imposition of radical political philosophy on an entire profession is an affront to all independent thinking people, and I reject it out of hand. Further, Dr. Benson's proposal to gain control of public institutions such as education, the press, and government in advance of his private political agenda is in direct opposition to all architects' right to develop and articulate their design philosophy based upon their own values and client needs.

—Kurt A. Flechtner, AIA
Hanbury Evans Newill Vlattas & Co.
Norfolk, Va.

Inside-out, and round and round

A comment on the interior-architecture related issues raised in your September issue. Based on my experience as a student, there is very little emphasis on interior images and how, if at all, they can inform a building's outward character. My studio conversations primarily address functional and pragmatic issues, such as spatial relationships and inside/outside dialogue. We rarely discuss the material quality of interiors in our designs, and I wonder if this is really the best way to conceive a building, especially at the conceptual level. After all, the arrival sequence is only one portion of experiencing a building and the overall impact it has on its users.

That said, it also a fact that the early stages of developing design skills at school are challenging enough. The gentle prodding to respect basic mechanical necessities and structural logic can at times be all a student can handle.

—Michael Hyatt
Collingswood, N.J.

The only game in town

It was with great regret but no surprise that I read in your July issue about interns falsifying IDP records so they could get a shot at the exam before they retire [News, page 55].

Not that I think interns as a group are dishonest or that I condone what they are doing. I don't. But, if the game is rigged and it is the only game in town, it should not come as a surprise if the players cheat.

IDP is a good idea and was started with good intentions. However, a funny thing happened on the way to the exam. NCARB got its grubby hands on a good thing and promptly made a mess of it. They took what was supposed to *help* interns toward registration and turned it into a minefield and a roadblock. Thanks to their bureaucratic ineptitude they have erected an obstacle course of requirements that is unrealistic, unnecessarily detailed, and practically impossible.

When is the profession going to wake up and admit NCARB is a big monkey on architects' backs—with its hand in their pockets?

—George S. Stuart
Atlanta

Sounding off

Is there someone out there who can define for me exactly what is meant by the term "limitless growth"?

For instance: The islands of Hawaii are still being developed (houses and office buildings, etc.), but they have long since passed the point where they could feed the people if shipping were to stop. Consider our planet and its continents to be like those islands: Where will our food come from then? (Not to mention the problem of water!) Is this where we're heading with limitless growth?

On public transportation: Until architects and urban transportation planners get out of their cars and *use* public transportation for at least one year, they will not have a clue as to what the problems really are. Building new systems will not get rid of the filth, as I have personally seen in San Francisco's BART system. I have been using public transportation for many years and that is only one of the problems.

Thank you for letting me sound off on these issues. I hope that I'm not the only one who cares about them.

—Yvonne Vail, AIA
Santa Cruz, Calif.

Keeping the faith

This is to congratulate you and to tell you how much your editorial, "Time for a Change," [June, page 15] meant to me as an individual and as editor of *Faith and Form* journal.

You write of the breakthroughs in science and philosophy and the emergence and development of new forms. You also wrote of new perceptions of time and space, and of architects and theoreticians who are grappling with them.

I agree that the spiritual dimension denies easy definition, but . . . I received a seminary degree from Chicago Theological Seminary at the time of Robert Maynard Hutchins. Many conservative denominations thought of the university as a hotbed of liberalism because theology was undergoing the same struggle for new forms that you describe architecture to be going through. Not long out of the seminary, my husband and I (a congregation clergyman) were challenged to form a new congregation in a developing community outside of St. Louis. Realizing (sadly) that seminaries gave us little education in art and architecture, we set about to learn as much as we could. The congregation wanted to build a traditional New England colonial church, but together, we worked our way to one of more contemporary design, more befitting the middlewestern psyche. It was IFRAA and *Faith and Form* that gave us the courage of our convictions.

Just as most architects do not work on the cusp of change, neither do most congregations think in terms of cosmic theologies of time and space, but they are influenced and are more aware of the complexity of an intelligent faith. A theological skeptic myself, I am more secure in my own faith on a changing intuitive and aesthetic level than on a permanent rational level.

—Betty H. Meyer
Editor, Faith & Form
Auburndale, Mass.

Faith no more

Robert Ivy's June editorial [page 15] searches to find a connection between architecture and modern physics. Such a premise is breathtaking, but it ignores both history and social reality.

Despite the efforts of Gehry, Eisenman, Koolhaas, and Hadid, the realization of architecture's time dimension—not just the search—is hardly new. Richly contrasting spatial effects, only experienced in time, distinguished Roman buildings. The same can be said of the Renaissance and certainly the baroque. Sixteenth-century Fatehpur Sikri and the stepwells of India are gorgeous and provocative examples of architecture that is focused, not on itself, but on mankind. Elegantly, time distinguishes architecture from both painting and sculpture.

Furthermore, Ivy ignores the social role of architecture and makes a distinction between the "form givers" and "most architects." Corbu, Mies, and Kahn developed ideas you could take to the local school board, with effect. Can the same be said of our current "stars"?

It's time to forego metaphysics and restore an ethical attitude and craftsmanship to building. Let us launch the new millennium with a clear mind about the beauties and excitement of building, but also its challenges—remember, Palladio was forced to build cheaply and, probably, on a budget.

—James A. Gresham, FAIA
Tucson

Not crying out for Guadalajara
While I can't match your breathless praise, I too had my breath taken away by your June issue's "Bold New Town" for Guadalajara [JVC Center, page 120]. How could this be called a town? While the buildings themselves may be skillfully wrought, the (sub)urban design is but a cartoon of a town: 10 pods and 2 collector roads. We've all seen this "town" before. It's called sprawl—the ruthless separation of life's components into single-use zones.

Indeed, it was surprising to see that the "dream team" of architects had been convinced to sit together for a group photo. Their buildings seem hell-bent against intermingling—as if the slightest integration might damage their artistic integrity. Sprawl has many causes, but it seems that we can add one more: the cult of the star architect. To properly display each individual's prowess, the city has been reduced to a mere chessboard, on which each player gets his own square. In this case, it is clear who the real pawns are. Happily, whatever the fate of Nueva Guadalajara's citizens, the authors of this noble experiment are now safely back home, enjoying their lives in traditionally organized cities.
—Jeff B. Speck
Miami, Fla.

Aging with grace
A note regarding your July Future column by Rita Catinella [page 194]. Please do everyone a tremendous service and mention an option that would enable a great many individuals to age in place: blocking. Survey after survey, study after study indicates that the most beneficial item that most elderly individuals request is a grab bar. Most homes in this country, old and new, are not built to support grab bars unless the owner is willing to tear out a wall.

If blocking of the wet areas were standard operating procedure, the potential to age in place and age at home would be extended dramatically. Blocking would allow anyone to add grab bars at any time, should they want them or have to have them.

Not a new thought but one that I believe needs repeating all too often.
—Mark Treitel
via the Internet

Rita Catinella responds: Thank you for your comments. Although not high tech, grab bars can be a simple, affordable solution to help the aging stay at home more safely.

Clarification
NBBJ would like to clarify its design intentions for its recent project for Vulcan Northwest [News, August, page 57], also known as 505 Union Station. Vulcan Northwest encouraged NBBJ to design a building that reflected the cutting edge character of its business, but which was also reflective of the two historic districts which surround the site. NBBJ feels that 505 Union Station respects the site and its neighboring buildings, while its design gives a new identity to the area.

Corrections
The San Francisco and Venice, Calif., offices of Ellerbe Becket Architects worked on the pedestrian bridge in Costa Mesa, Calif., not the Seattle office [August, page 62]. In our July News item on the Nikken headquarters designed by Gensler [page 66], we neglected to include a credit for the rendering by Douglas E. Jamieson. Also in our July issue [Doernbecher Children's Hospital, page 128] Anshen + Allen's senior principal Derek Parker's name was misspelled. We regret the errors. ■

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SPEAK OUT Strong building designs are often diluted by a lack of sensitivity to setting. Landscape architecture must be given its due.

BY WILLIAM CALLAWAY

William Callaway is president of the SWA Group, an international land planning and landscape architecture firm based in Sausalito, Calif.

America's cities abound with brilliant buildings, but these structures are often marred by the creation of unsuccessful places—for instance, the many lifeless, even forbidding office building plazas blighting downtowns across the country. Why does this happen? When many architects, developers, and corporations design and construct a new project, they often think about the building as a stand-alone artistic and functional entity, ignoring its role in the surrounding urban or suburban fabric. Landscape architecture is not given its due.

Historically, placemaking was a key objective that created French chateaux set in the midst of lavish gardens, towering European and Latin American cathedrals fronting landscaped plazas, and stately U.S. courthouses filling one side of a town square. At the turn of the century, placemaking was a fundamental principle of the City Beautiful movement. Even after World War II, partnerships between architects and landscape architects—including teams such as Belushi-Sasaki, Pei-Kiley, and Moore-Halprin—created well known and enduring places such as the Weyerhaeuser Headquarters in Tacoma by SOM and SWA and Boston's Christian Science Center by Pei and Sasaki.

Unfortunately, the creation of places by teams of architects and landscape architects has been the exception and not the rule in recent decades. This stems from several ingrained problems. In planning a project, for example, developers and corporations constructing their own facilities often consider placemaking an unimportant element—even a costly and unnecessary frill—compared to the design of the actual building.

The significance of setting

The truth is that place not only creates welcome beauty and open-space amenities, but it also can generate tremendous marketability and long-term value. Look at Manhattan's Rockefeller Center. Its innovative master plan and landscape design created a distinctive marketplace identity that has attracted high-profile tenants and solidified the property's value over the last 60 years.

But many architects cling to the stereotype of landscape architects as planters of trees and flower beds. They do not recognize that the work of today's landscape architects encompasses the land and buildings, hard and soft infrastructure, surrounding uses, and particularly how these components can work together to best benefit the client, the community, and the site. Landscape architects bring placemaking skills to the larger design team.

We need to broaden the design focus from buildings to places. At the university level, architecture and landscape architecture departments must establish joint studio programs that present students with problems which require multifaceted solutions. An ideal joint studio would cover architecture, landscape architecture, economic and development issues, social concerns, and environmental issues.

Practicing architects must give site and building orientation a high priority. This is a key element of the "green building" movement; following these principles, architects and their larger design teams start with site planning and site design issues, sun orientation, building placement, and other big-picture place issues before they plan exterior and interior elements. They look at the entire project—site, building, and surroundings—as pieces of a greater whole.

The benefits of placemaking are all around us: from Pete Walker's work with Helmut Jahn on the Hotel Kempinski at Stuttgart Airport in Germany, to Kiley's work with Richard Meier on the Getty Center in Los Angeles. The American public—and many architectural clients—no longer want or accept development as usual. They want a built environment of beautiful, inviting places where they feel part of the larger community.

We can create those places. We must design those places. But we must adjust our attitudes toward landscape architecture and the concept of place before we can achieve these gains. ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk) to Speak Out, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.archrecord.com and clicking on News/Features/Dialogue. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive text approval.*

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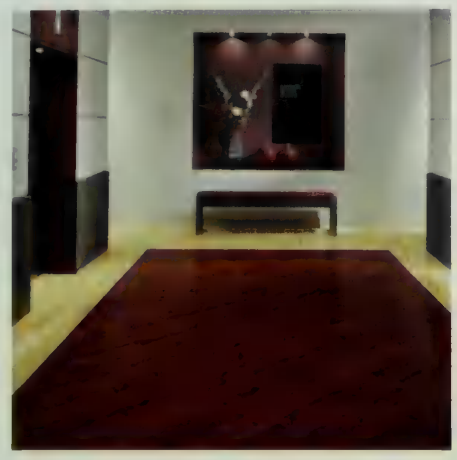

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CIRCLE 14 ON INQUIRY CARD

MENTORS Marketing is easier than you think. A few simple techniques will help you connect with clients and snag commissions.

Kenneth Caldwell is a communications consultant for architects and interior designers. He can be reached at KRCaldwell@aol.com.

Too many architects see marketing as a foreign concept, or worse, a dirty word. Many still resort to cold-calling potential clients and think of it as a marketing ploy. But the fact is that most architects win commissions not by making cold calls, but by communicating a consistent and appropriate message to their target audience. The key is to manage a process that is already happening. A busy economy is the right time to work on publicity, direct mail, Web sites, and photography. These are all pieces of a marketing strategy that architects can devise and implement.

Creating the image

Every employee who comes into contact with a client, consultant, leasing agent, facility manager, or vendor communicates a message about his or her firm. In effect, every employee is marketing. Clients base decisions on brochures, phone calls, interviews, and previous commissions; if these elements add up to a consistent message, it is more likely that a "connect" will occur and a commission will result. It is essential that an architecture firm's employees all be on the same page, because if the evidence is contradictory (e.g., a handsome brochure followed by a disorganized interview), the client experiences a "disconnect" and looks elsewhere.

Most architects begin their practices with a vision. Translate that vision into a message that sets you apart. First, list your major competitors and your impression of those firms. What is each firm's message? Recent monographs can give you some ideas. Then, think of a possible message that describes your own work and purpose. Check for consistency. A disconnect will occur if you are laboratory architects of the future using Gothic typeface, or a landscape architect without any living plants in your office. A focused message—expressed in proposals, interviews, speeches, photography, Web sites, and even the way the receptionist answers the phone—helps a firm sharpen communication efforts. After honing your message, periodically trace the source of major leads and commissions to reveal patterns and chart a course of communication.

Almost every building type has a correlating professional group interested in your expertise. Communicating your firm's message to these groups can result in leads. It doesn't hurt to attend functions of allied professionals, as well. Nonprofessional networks, such as volunteer groups and even kids' soccer games, offer opportunities to establish contacts. Once people meet you, they want to know what you do.

The traditional lunch also remains a valid means of marketing. Each year, determine the key contacts with whom a social lunch would permit you to exchange valuable information and build a relationship.

Many architects dream of being featured in a national design magazine. Opportunities also exist in local and regional publications. Publicity like this is extremely useful if it reaches your target audience and if the reprints support your collateral and direct-mail programs. Direct mail might also include announcements about awards, promotions, and project openings, as well as a holiday card. A clever design and high-quality images will convey your message and help you stand out.

Your future is now

A Web presence is the Yellow Pages listing of the future. It is not a brochure. The goal is to get a potential client to call and connect. Find a Web designer who understands how to generate hits and—this is essential—links to your clients' Web sites. Architects are also permitting clients to use their Web sites for furniture research, interactive drawing, and sending documents.

Most of these strategies present architects an opportunity to initiate interviews, during which they will rely on their ability to communicate verbally and use visual media to demonstrate expertise. Excellent photography may be the architect's most important (and expensive, admittedly) marketing tool. Cultivate relationships with photographers who understand your work, and attend the shoots to be sure your message is captured.

A healthy economy is the time to market yourself. With a focused message and the right venues, you can develop relationships for the future—when your practice may not be so busy. ■

Questions: *If you have comments about your career, professional ethics, the law, or any other facet of architecture, design and construction, send submissions: by mail to Mentors, Architectural Record, Two Penn Plaza, Ninth Floor, New York, NY 10121; fax 212/904-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

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CIRCLE 15 ON INQUIRY CARD

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PULSE RECORD readers were asked: Interior architecture: is it architecture's neglected stepchild?

Yes. Firms, even large corporate firms, have only one or two employees that deal with interiors. These over-worked designers have projects simply thrown at them when the architect has completed the core design. Much too often the interior department is not even notified until the project is completely designed elsewhere. There is no connection made between the departments, which results in poor, unsuccessful architecture.

Designers must realize that the normal occupant of a structure doesn't stand outside and look at the building from afar. One really becomes aware of how successful the place is by living and working in that environment.
—Deborah E. Boal
Einhorn Yaffee Prescott
Washington, D.C.

Yes. "Interior architecture" is a term made up after the neglect of the interior became a significant situation. Architecture should encompass the entire scope of all forces that participate in the design process, including the interior architecture.
—Johannes Woestenborg
Seattle

More answers to: Should architects be more political?

Yes. Given the complexities and obstacles often encountered in physically realizing designs, I'd say that it is a definite must.

The very nature of the work calls for it. The architect is not just artist but civil servant and needs to have the political persuasiveness to incite the real policy makers to adopt solutions—for the good of the community—that may not be obvious to ordinary laypersons.
—Scruces
via E-mail

Yes. A resounding YES! As a whole, architects continue to quietly design and construct buildings based on rules set by people who are not designers. Who sets these rules? Local politicians and community leaders who are not design professionals. The time has come for architects to throw their hat into the political ring and speak out. Architects can help put into perspective issues that become muddied by opposing special interest groups. This is what we were trained for!
—Jeremy Fletcher
Shady Side, Md.

Yes. The entire thing is tied together. If the government is putting together policy that supports business and construction, we all gain.
—Anthony Adesso
New York City

Yes. Ideally, it would be nice to have activist architects. However, I believe that most architects refrain from expressing political opinions in public for the sake of not offending past, present, or future clients.
—Mig Halpine
Cesar Pelli & Associates
New Haven

Yes. Definitely. Influencing politicians is critical if progress is to be made toward improving the legal environment for practicing architecture. More important, architects need to strip away the mentality that political office is beneath their dignity or station. In political office, one can truly affect the making of laws, establishment of policies, and emphasis on a profession. Key staff positions for facility management and development held by architects in government should be an objective as well. Lack of involvement and apathy should be a crime.
—Michael A. Fitts, FAIA
State Architect
Nashville

Yes. We owe it to ourselves and our art to become better politicians. As a group, we pitifully take for granted that we aren't players and contribute only marginally while other professions aggressively shape this world. I wonder how architects show up to work if they are not convinced of their value, the way surgeons are. If we fail to persuade a collective consciousness that we as a profession make all the difference and that the built world's health depends on us, then our clients will become less and less willing to respect our expertise.

We know how to be political—as a group, we're clever and have good intuition. What good are our talents and principles if we have no voice?
—Laura Marks
Room 4
El Paso, Tex.

No. Long after political theories have come and gone buildings still stand. Why? Politics are based on achieving short-term results for the greater good of an individual, while architects think of sustainability, not self-glorification or short-term stop-gaps.
—David J. Noble
Dublin Institute of Technology
Dublin, Ireland

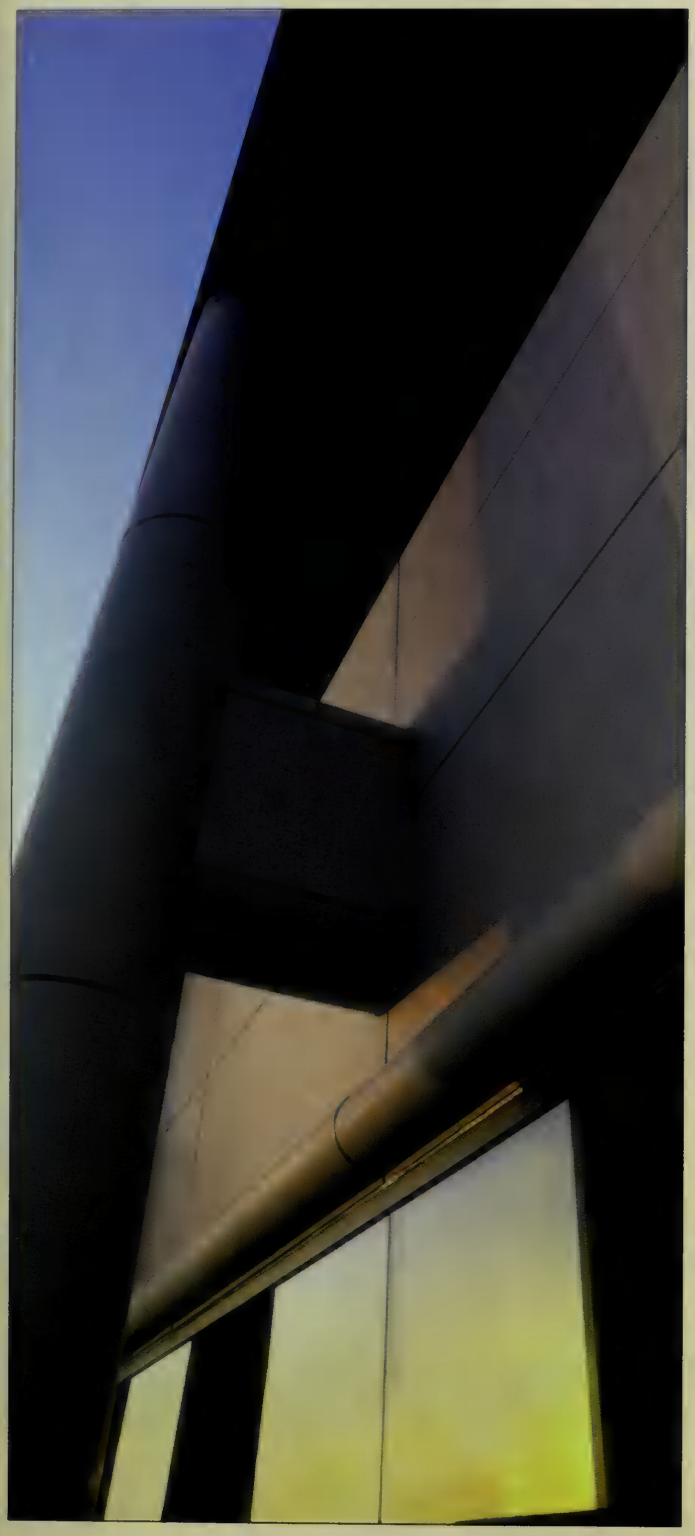
This Month's Question

Have architectural fees kept pace with the increasing costs of personnel and technology?

During the 1950s and early 1960s, when most architects charged according to fee schedules, they made 6 percent from an average job. At the same time, costs for personnel and overhead rose faster than the cost of construction, and architects lost money on one job out of four. In the most recent construction boom, have your fees kept pace with the costs of personnel and computer equipment required to produce the work? Turn to page 110, "The Fee Dilemma Part I," for the history of fees. Then give us your opinion.

Fax your response to ARCHITECTURAL RECORD, 212/904-4256, or visit www.archrecord.com and click on News/Features/Dialogue to voice your opinion by E-mail.

Note: *Pulse reflects individual responses to each month's question and is not meant to be construed as formal research.*



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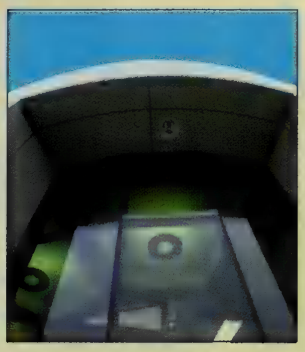

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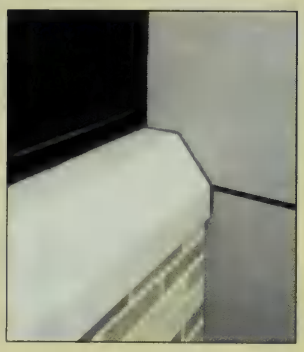

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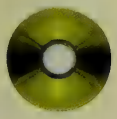

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CIRCLE 16 ON INQUIRY CARD

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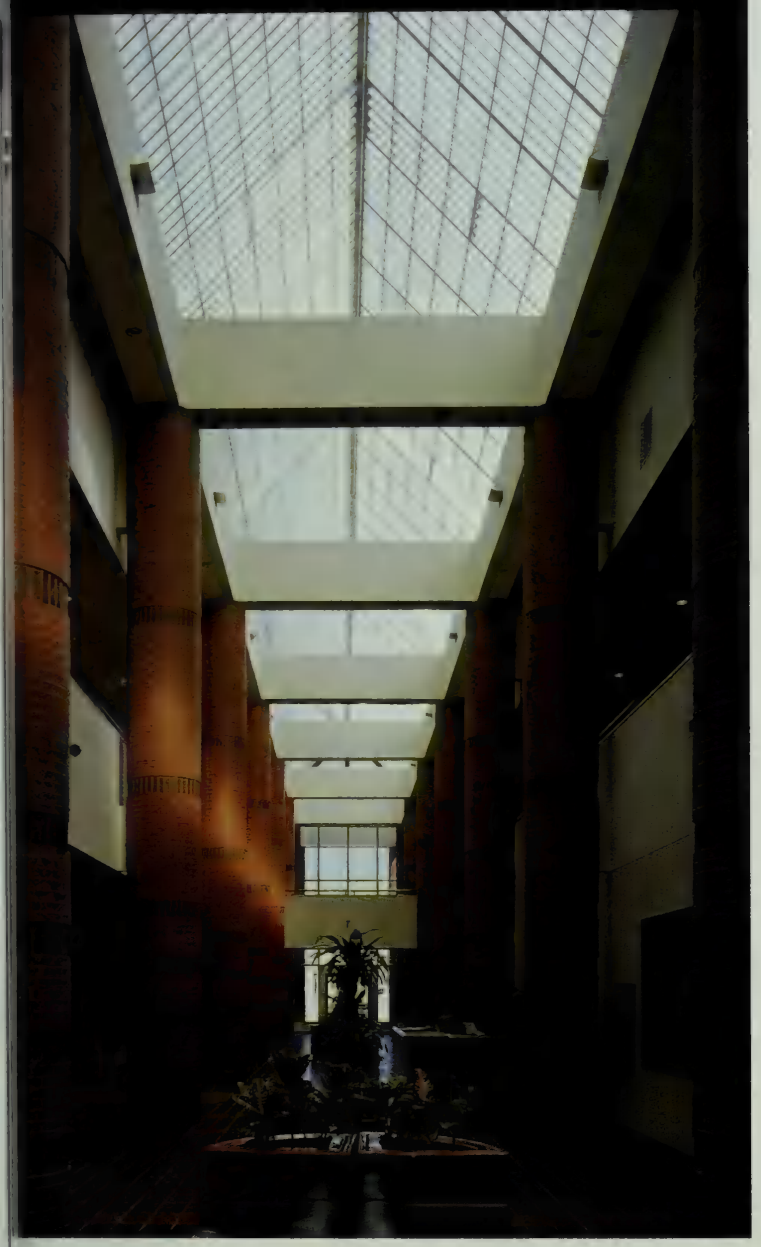

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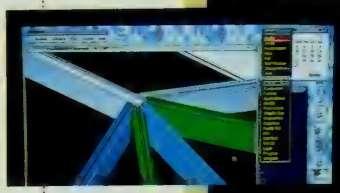

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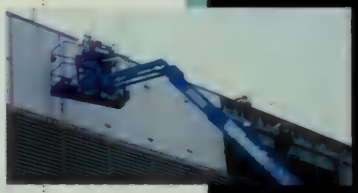

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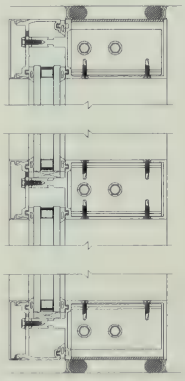

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CIRCLE 21 ON INQUIRY CARD

CRITIQUE Despite the desire for hype and attention, a museum addition should complement the art collection, not overwhelm it.

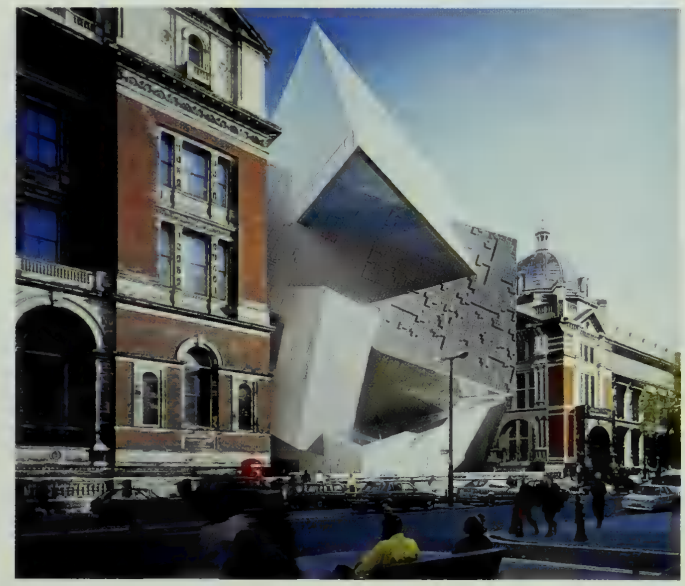
BY J. CARTER BROWN

Museum additions are all over the news. Last year, the Museum of Modern Art in New York City chose Yoshi Tanaguchi as its next architect after much suspense; Rafael Moneo's new building for the Houston Museum of Fine Arts nears completion; the Getty is giving birth to an addition by Rodolfo Machado, ASSOC. AIA, and Jorge Silvetti, ASSOC. AIA, in Malibu; the Corcoran in Washington, D.C., has selected Frank Gehry, FAIA, for its addition; Renzo Piano will design a large addition to the Art Institute of Chicago; Lord Norman Foster, HON. FAIA, was chosen to extend the Boston Museum of Fine Arts; and the Nelson-Atkins Museum in Kansas City, after a very intense selection process for its expansion, has announced the winner of its sketchbook competition: Steven Holl, AIA.

Exhibition space as icon

Adding to an art museum presents all the usual problems of expanding a preexisting building, as well as some very specific ones resulting from the roles that museums must play. As Paul Spencer Byard, FAIA, posits in his brilliant book *The Architecture of Additions,* a building is both what it *says* and what it *does*. Art museums, as civic icons and vessels of enduring values, become loved for what they say, making any change from the familiar—always a public risk—particularly sensitive. Because museums are public institutions, their roles in the urban fabric is especially visible. Unlike exhibits that a visitor can choose to see or ignore, a museum's exterior becomes an unavoidable presence. Moreover, as institutions, museums stand for design excellence and heightened visual awareness, so it is incumbent on additions to embody the same messages.

In my view, the best additions complement the original buildings without overwhelming them. (It is too early to tell whether Daniel Libeskind's proposed infill structure for the Victoria and Albert in London would contradict this view.) At the Nelson-Atkins, Holl came up with an ingenious solution, different from the other five proposals, that left the self-contained original building of 1933 visually untouched and in charge by exploiting the uniqueness of the museum's bermed sculpture garden to the south. I. M. Pei, FAIA, has always insisted that his addition to the National Gallery in Washington be called the East Building, not the East Wing, and that it not be seen as upsetting the symmetry and wall planes of John Russell Pope's structure. He must have been doing something right—a 1986 poll of the AIA membership named the East Building as one of the 10 best American buildings.



Daniel Libeskind's proposed addition to London's Victoria and Albert Museum is slated for completion in 2004.

Overdoing the institution

Recently, the perceived need to call attention to a museum through its architecture has become so intense that we may end up learning from Las Vegas too well. Architecture at its best should be more than outdoor advertising. The current trend is partly a matter of zeitgeist, which will change with the pendulum's next swing. But to an age dominated by television violence and extravagant 30-second ads, less is a bore, as witnessed by the "Sensation" exhibition, mounted at the Royal Academy of Art in 1997 and now at the Brooklyn Museum of Art until January 2000.

Luckily, it is not the style or the manifesto that counts; it is the talent of the practitioner. The art school that Gehry appended to the serenely classical Toledo Museum of Art, for example, is so beautiful that the question of style becomes secondary. His Guggenheim in Bilbao, perhaps already the most famous piece of modern architecture in the world, is so powerful as a civic statement and city rescuer that there is danger that lesser talents, using the same computer technology, will create Gehry-wannabe buildings that disrupt our cities.

The nature of the beast

Beyond what it *says*, the power of a museum addition lies, as in all architecture, in what it *does*. An art museum's internal functions are highly complex. Increasingly, museums are asked to be people places that provide restaurants, publications and museum shops, auditoria, lecture rooms, and (sufficient!) bathrooms. In addition, there is this pesky art-presentation function, which is so often scanted in favor of everything else the building is asked to do.

J. Carter Brown, HON. AIA, was director of the National Gallery of Art from 1969–92. He has been chairman of the U.S. Commission of Fine Arts since 1971 and of the Pritzker Architecture Prize Jury since its inception in 1978.

First comes the unglamorous responsibility of ensuring that fragile, geriatric objects are passed intact to future generations, which means providing security, temperature and humidity control, and protection from the damaging effects of light. This last is a shame for the experience both of the architecture and the art, because many spaces—and most objects—look better with more light, preferably from our favorite source, the sun. Beyond keeping enough light off the objects (which vary in fragility by medium and age), there is the question of how to optimize the visitor's experience of the works of art. The building should be beautiful on the outside and exciting to enter. Once the visitor is in the spaces devoted primarily to objects of art, the architect must yield to the visual statements of different artists.

EXTENDED VIEWS FROM THE EXHIBITION ROOMS ATTACK PERIPHERAL VISION AND DRAIN ENERGY AWAY FROM THE ART.

The theater is not the show

Bernard Berenson once remarked that some of the best pictures speak with a still, small voice. The client has to understand that some architects may not be predisposed to see it that way. As Robert A. M. Stern said in Ken Burns' documentary on Frank Lloyd Wright, "After the Guggenheim, who cares about all the art in the museum if the building itself isn't thrilling?" If one is given a theater to design, it is important to manage the progression of spaces, the lobby, the "house" in which the audience sits awaiting the performance. But from then on, the houselights dim, and the viewer should forget the architecture. One would not expect the architect to have provided a single set to accommodate every possible production that might appear on that stage.

Art looks best in rooms. Victoria Newhouse, in her articulate and thorough *Toward a New Museum*, tends to favor gymnastically titillating spaces for showing art—an approach that may set back successful design rather than fulfill the museum's primary responsibility. Mies did a lot of damage with his vision of a Museum for a Small City. The ceiling plane is uninterrupted by interior walls, and there are only freestanding partitions for hanging the art that helps decorate the Miesian glass box.

Scale is crucial. In galleries devoted to the display of art, objects look best if the spaces do not provide more volume than the object can dominate. Art has little impact when displayed on shelflike mezzanines, where walls are missing, and visitors' attention is constantly drawn to the architecture and activity beyond. Our peripheral vision is more sensitive to movement and light than our central vision. It is important psychologically to have some sense of the exterior context, but in general, extended views out of exhibition rooms attack the visitor's peripheral vision and drain energy away from the art. If light enters from above, it is vital that the upper part of the wall not be brighter than the part where the object is exhibited. Similarly, with luminous ceilings, often the middle of the floor is most intensely lit. Also, exhibits usually change. Flexibility is the most demanding requirement an architect must meet. The problem is that most architects would prefer to leave their stamp on a space for all time.

All these criteria contribute to making the design of a museum addition one of the most difficult challenges an architect can face. Both for what it is and what it does, the task demands a two-fold collaboration: first, with the existing building, to achieve a *gesamtkunstwerk,* where the whole somehow is greater than its parts, and second, with each visual artist whose creation is displayed. ■

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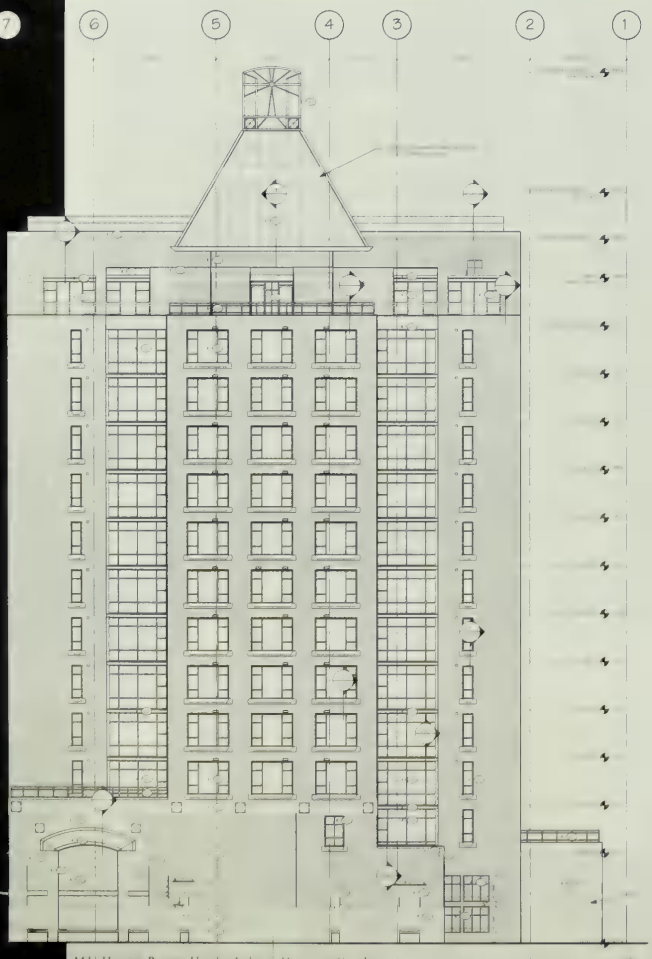

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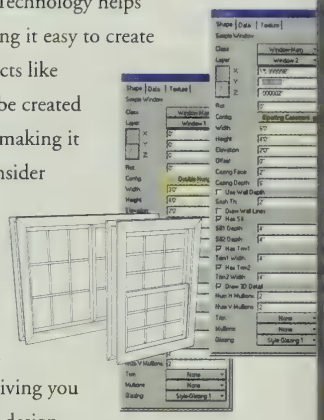

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CIRCLE 23 ON INQUIRY CARD

DIGITAL ARCHITECT Two architects demonstrate how object-oriented CAD, the technology du jour, will change the way design work is done.

BY B.J. NOVITSKI

As computer software develops, its ability to support the way architects work and think constantly improves. While early CAD systems simply drew a line between two numerically defined points, the latest versions work with objects that embody specific architectural information. The term *object*, in this context, actually comes from computer-science jargon.

In an object-based system, a wall, for example, is more than two parallel lines on the computer screen. Instead, the graphic correlates with a database of characteristics, such as height, thickness, materials, finish, sound-transmission class, and fire rating.

Autodesk's new Architectural Desktop Release 2 incorporates within the software the long-awaited Industry Foundation Classes (IFCs), standardized computer definitions of objects and their behaviors. IFCs were developed by the International Alliance for Interoperability (IAI), an organization dedicated to developing software standards to facilitate compatibility between programs.

James J. Balding, AIA, and Larry Rocha, ASSOC. AIA, the chief information officer of the Newport Beach, Calif., office of Wimberly Allison Tong & Goo (WAT&G), are experimenting with Architectural Desktop to determine whether to use the program throughout the firm. WAT&G specializes in hotels, resorts, and theme parks and has been innovative in adopting information technologies. The firm has a long-standing relationship with, and an investment in Autodesk products, training, and customization. Here's what the architects have found:

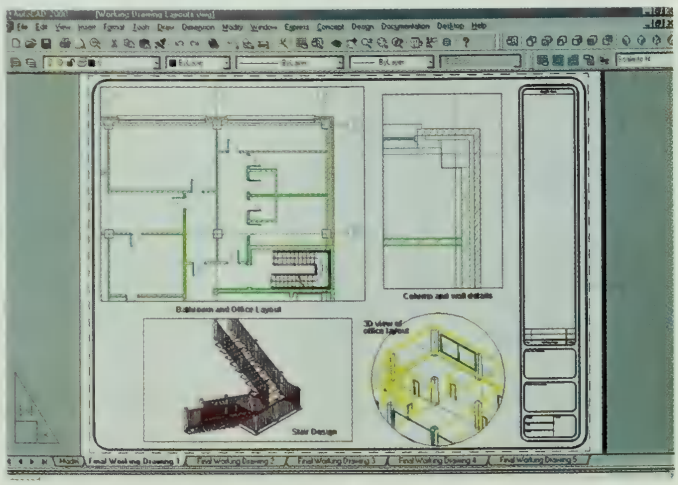
The wonders of objects

"The first breakthrough you have when working with object-oriented software," Balding says, "is when you suddenly realize that you're no longer just drafting but building a model. This is exciting: a revolutionary mindset."

Rocha adds: "While there is a lot of focus on the 3-D graphical representation of objects, the biggest advantage of objects is in the nongraphic data that is attached to them."

Rocha is referring to the architect's ability, with Architectural Desktop, to input and modify an object's attributes with specialized on-screen dialogue boxes. A door, for example, is characterized by its material makeup and its association with a wall. If the architect places the door in the middle of a room, the program automatically snaps it to the nearest wall. If the wall is moved or deleted, the door will move or disappear with it. If the door's specifications place it six inches from a corner, it retains that offset even if the adjoining wall is moved.

"Eventually manufacturers will provide objects with complete specifications, including costs, attached to them," Rocha says. "We'll be able to extract this information with a simple search." He believes this development will not only automate material takeoffs and door and window schedules, but also will ensure their consistency because they come from the same database as the drawings.



In Autodesk's Architectural Desktop Release 2, designers can lay out rectilinear and angular grids and use them for placing columns, walls, and other building components. When a grid is modified, the associated columns automatically change as well.

Intelligent objects are wonderful in theory, but they can also be difficult to create because of their complex behavior. "A wall is not really a single object but a system of objects," Rocha says. "At WAT&G, we're studying the idea that there may be several levels of intelligent entities. These include basic components such as screws or nails; objects that are combinations of components, such as a knob or a hinge; assemblies that are collections of objects that exhibit complex behaviors and attributes, such as a wall or roof; and building systems, such as a structural or mechanical system." Viewed from this perspective, the complexity of defining objects and their behaviors is even more apparent.

New on the menu

In addition to the normal AutoCAD pull-down menus, Architectural Desktop has three new menus: Concept, Design, and Documentation, which contain tools for each phase of design. For example, the Concept menu lists functions that support the creation of massing models. By saving different massing combinations, the designer can compare and contrast a variety of schemes. "We find ourselves using this to communicate ideas to each other and to clients and consultants," says Balding. "These models clarify the three-dimensional space, proportions, design intent, and project scope."

WAT&G architects have been particularly impressed with the conceptual space-planning tools, also on the Concept menu. A

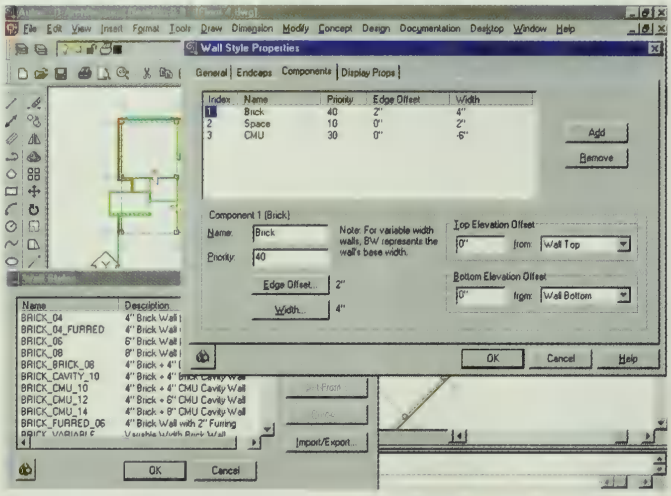
designer can develop preliminary schemes conforming to specific area requirements without interrupting the design process to recalculate areas. With the digital equivalent of bubble-diagram manipulation, the architect can specify a space's floor area with one plan dimension; the computer will calculate the other dimension and provide a rectangle of the proper size, which can be moved in relation to other area rectangles.

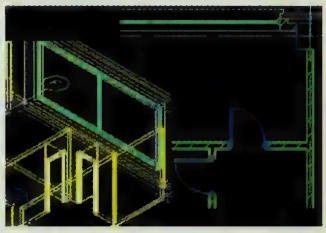
The Design menu's customized objects provide the tools for producing and placing in the model walls, doors, windows, roofs, stairs, and other design elements. This menu is expected to get the most exercise at WAT&G.

The Documentation menu helps the architect annotate 2-D representations of the model. Some of the symbols are more intelligent than their AutoCAD equivalents. For example, each door tag is associated with a particular door, so when the door height changes, the tag updates automatically without manual editing. This feature not only speeds production drawing, but also ensures accuracy.

Customizing the software

Out of the box, Architectural Desktop includes many generic objects, which most firms will want to customize to conform to their own standards and practices. WAT&G has already begun to build wall types, doors, and fixtures that they will test in designs.





A library of styles can include all of a firm's standard construction types (top). After building such a library, applying the styles to a model is simple. Intelligent objects can be viewed from any angle (right). The software adjusts the display depending on scale and angle.

Customizing objects does not require special programming, but simple editing of values in the associated dialogue boxes. In the process of specifying a wall object, for instance, the thickness of each layer of material within the wall is defined in terms of its distance from a baseline, such as the face of a stud.

Typically, a firm would establish a set of styles to correspond to the wall types likely for a given project. This painstaking process should be conducted by an experienced architect familiar with the firm's construction standards. After the various styles are established, however, it will be far easier for the rest of the staff to apply the styles without worrying about technical details. An object from the menu will automatically contain the necessary data. This will not guarantee error-free design, however, because it's always possible that an inexperienced designer will pick an inappropriate wall type.

Productivity suffers when CAD forces designers to become too specific about materials too early in the design process. "To resolve this, all walls are initially specified as five, six, or eight inches thick," Balding says. "Then, when all the walls have been laid out to an acceptable level, the designer can go back and assign them a more specifically defined style, such as a six-inch stud with two layers of gypsum board on each side. The wall in the underlying database is then appropriately updated. The change is instantaneously reflected in each displayed view. The same can be done for doors, windows, and most other objects." Later, when dimensions are applied, they refer to the revised configuration.

Using the Design menu, architects can also project elevations, sections, and perspectives. These alternate views do not contain the level of detail normally associated with design development and construction drawings but can serve as templates on which to add more detail. For example, a wall in a section might initially show only a few vertical lines representing the stud and layers of gypsum board, but symbols for headers and insulation would have to be added with conventional computer-aided-drafting techniques.

Although these 2-D additions are not part of the intelligent 3-D model, they remain visible in the section drawing. An anchor to move such graphic elements with the associated model components when there are design modifications would be an improvement.

In the distant future, every detail of a building will be modeled as an intelligent object. Until then, design and production drawings will necessarily be hybrids of projections from the model with ordinary drafted elements. This means that automated material takeoffs will operate only on the true objects, and architects will need to manually change the drafted elements when the associated objects are moved or modified.

Tapping the knowledge base

DesignCenter, the centralized symbol repository in AutoCAD 2000, is structured as a nested hierarchy of folders. This folder structure is an index to firm-specific object libraries. By opening these folders in Architectural Desktop, designers find thumbnail, wire-frame versions of 3-D objects. These miniatures can be rotated in real time and dragged into the working model. Eventually, DesignCenter will provide the means for architects to archive object-based product information transmitted via the Internet.

Manipulating forms and objects within Architectural Desktop is intuitive and easy to learn for those used to AutoCAD; the interfaces for both are similar, Balding says. Familiar point-and-click and drag-and-drop techniques enable designers to do graphic editing. Nongraphic editing requires selecting data windows from a menu and typing in appropriate data fields.

Both Balding and Rocha look forward to the day when a single model embodies all of the information, graphic and nongraphic, about a building. The promise of the IAI has been that such a model would become a receptacle for design input from all disciplines, throughout every phase of a building's life cycle.

There are still major hurdles to overcome before this becomes a reality, however. According to Balding, architects need greater computing speed and power, reliable operating systems, better Internet-based file management, and more of the building defined in terms of IFCs. Architectural Desktop Release 2, he says, is a step in the right direction. ■

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CIRCLE 25 ON INQUIRY CARD

EXHIBITIONS Realizing that "everything connects," Charles and Ray Eames pioneered a new kind of design practice that's still fresh today.

BY THOMAS HINE

"The Work of Charles and Ray Eames: A Legacy of Invention" opens at the Cooper-Hewitt National Design Museum in New York City on October 12. (The exhibit's first U.S. stop was at the Library of Congress in Washington, D.C., last summer.) It will be at the St. Louis Museum of Art from February 19 to May 14 and at the Los Angeles County Museum of Art from June 25 to September 11.

One of Charles and Ray Eames' first films, *Blacktop* (1952), begins with a close look at suds being pushed across a patch of asphalt by an unseen hose. As the scene continues, the suds coalesce into dynamic blobs, shapes reminiscent of the work of Wassily Kandinksy and Alexander Calder, Joan Miro and Jean Arp. Their constantly morphing patterns invite us to delight in flux, dynamism, and the exhilaration and promise of modern life and of Modernist art and design.

When installed at the Library of Congress in Washington, D.C., the Eames exhibition offered a Modernist contrast to the building's Neoclassical architecture (above and below). Designed by Hodgetts + Fung, the exhibition highlights the Eamses' great range, from buildings to furniture to films.

The idea that you can be an action painter while washing the car is extremely seductive. Indeed, you might even be so charmed that you accept the film's implication that a particular kind of visual abstraction results from physical principles at work—though the notion is questionable. Making art seem natural was an Eames specialty.

Examining the commonplace

Still, *Blacktop* is quite literally a marvelous thing. Only the Eameses would have tried to prove the inevitability of Modernism by examining something as commonplace as soapsuds. Moreover, because they were educators, but rarely explainers, their little Modernist manifesto contains not a single word.

"Everything Connects" says a quotation from Charles Eames that dominates the installation of "The Work of Charles and Ray Eames: A Legacy of Invention," an exhibition organized by the Library of Congress and the Vitra Design Museum in Germany (where it started before traveling to England and Denmark). This declaration doesn't directly contradict the dictum "Less is more," which so dominated the world of high design in the middle of the century. The Eameses weren't confrontational. But by suggesting that everything is worth thinking about, that everything is interesting, they imply that less might not be enough.

Charles and Ray Eames practiced an inductive kind of design, not a deductive or reductive one. After accepting a commission to design an aquarium, they filled their office with tanks of sea creatures. (Charles formed a personal bond with a squid which would swim over, according to some reports, to say hello to him.) The project didn't produce a building, but it did inspire an exquisite little

Thomas Hine is the author of The Rise and Fall of the American Teenager, *published in September by Avon/Bard.* Populuxe, *his book on postwar American life and design, was recently reissued.*

The Eames House, then (above) and now (right). Fifty years old, the house carries on its original purposes as a residence for an Eames daughter and the base for the Eames Office, now run by grandson Eames Demetrios. Much of the seemingly casual arrangement of furnishings and "artful things" has remained the same over the past five decades.

film, a few minutes of close observation of a tiny, almost transparent jellyfishlike creature. It leaves you awestruck at the beauty and strangeness of life, even in this most minimal form.

The exhibition, directed by Donald Albrecht and designed by Hodgetts + Fung, and its catalog do not dwell on the Eamses' iconic chairs and other furniture. Instead, they concentrate on how two different but complementary people created both a way of practicing design and a new kind of practice that incorporates the design of furniture, exhibitions, and film.

Ahead of their time

They were passionate optimists, who seemed never to doubt that almost any problem could be solved joyfully. And although they had a real desire to change the world, they didn't bully anyone or make grand pronouncements. They convinced others by example and implication. In retrospect, it is apparent that they were experimenting with multimedia before there was a word for it, they were performance artists before the concept existed, and they were multiculturalists not out of guilt but because they hungered for the colors, forms, and ideas of people from all over the world.

Charles and Ray Eames each possessed that ineffable attribute known as "a great eye." In fact, the exhibition's videotaped reminiscences by staff members and Joseph Giovannini's discussion in the catalog of Charles' and Ray's backgrounds suggest that they had two distinct sorts of visual sensibility. Charles, who was trained and practiced as an architect, saw things best through a camera lens. Photography forced him to isolate the details, detach himself from them, and, usually, to evaluate them objectively. (Some staff members recall, though, that he was sometimes hardheaded.)

Ray Eames' had been part of Hans Hofmann's circle of abstract painters in New York in the 1930s. She added a sensibility shaped by European Modernism to Charles' machine-shop pragmatism, and he depended on her judgment of the overall form and composition of their designs.

Together, they practiced a highly disciplined spontaneity in design. However, that apparent freshness grew from enormous research and preparation and reached a high level of finish through their own hard work and that of their dedicated, multidisciplinary staff. They celebrated inspiration, but practiced obsession.

A radical prototype

The Eamses' house in Pacific Palisades, Calif., 50 years old this year, is a case in point. Charles had designed a house for the site that was published and praised, and the steel and glass to make it had been ordered. Then, from these same parts (and recent scholarship suggests, a few others), they constructed a very different house and studio, on a different part of the site. This was a powerful statement of the designer's (and homeowner's) freedom, an affirmation that future architecture could be assembled from already available building parts. It was the first and, in its down-to-earth, matter-of-fact way, most radical of America's three mid-century glass houses. While Philip Johnson's Glass House and Mies van der Rohe's Farnsworth House functioned as weekend villas for the wealthy, the Eameses' house was intended as a prototype for postwar middle-class living.

They filled it with stuff, "all kinds of small, artful things" scattered, meticulously, everywhere. Photographs show that while some of these seemingly casual arrangements were refined and replaced over time, others budged barely a millimeter in a decade.

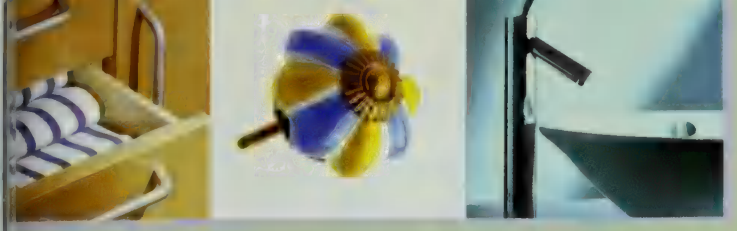
An ordered multiplicity

Thus while one wants to place Charles and Ray Eames in the pantheon of great post-World War II American improvisers, along with Jackson Pollock and Charlie Parker, much of what people love about the work comes from the sense of care lavished on its creation. The Eameses probably had less in common with the pioneers of bebop than with that other master of orderly multiplicity, Johann Sebastian Bach.

At the beginning of their film *Two Baroque Churches in Germany* (1955), the audience is asked to admire in the architecture it is about to see its "precision, delight, calculation, and emotion." This interesting series, in which each word seems to contradict the one before it, places all terms in apposition to the featured churches and the Eamses' work as well.

Calculation is the climactic word. It is a near synonym for precision, of course, but it also suggests that there are varying methods to produce delight or whatever response one wishes to evoke.

The final word, though, is emotion. In the churches shown, calculation produces something transcendent. Perhaps it's because those who built the churches really believed in what they were doing. And so did the Eameses. ■



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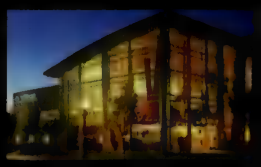

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CIRCLE 26 ON INQUIRY CARD

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CORRESPONDENT'S FILE The Mile-High City, trying to overcome sprawl and stubborn traditionalists, embraces a recent burst of architecture.

BY DAVID HILL

"Imagine a great city." That's what former Denver mayor Federico Peña used to say in the mid- to late-1980s, when the Mile-High City was in the throes of a deep recession. Back then, you needed a good imagination to see beyond all the boarded up businesses scattered around town. The unemployment rate was nearly 10 percent, and office vacancies were at an all-time high. Denver's three tallest skyscrapers were built early in the decade, when times were good; later they stood virtually empty, victims of boom-and-bust economics.

What a difference a decade makes. Denver is now flourishing. If it isn't yet a great city, it's looking better. The city has a number of well-designed structures—some old, some new—and more than 3,000 residents now live downtown. But two obstacles continue to stand in the way of adding truly innovative architecture to the skyline: suburban sprawl and a conservative aesthetic that favors traditionalism over contemporary design.

Sprawl has never been more pervasive and more apparent. Since 1990, Denver's population has grown from 467,610 to just over 500,000. During that same time, however, the surrounding counties have grown from about 1.4 million to about 1.7 million. Huge, bland housing developments cover the prairie in once-rural sections. Traffic congestion has reached epic proportions. Mayor Wellington Webb is keenly aware that Denver's renaissance could be threatened by regional sprawl. For now, however, the mayor is basking in the city's revival, and he's counting on taxpayers to help fund some big-ticket projects. In the inaugural address for his third and final term, Webb pledged $22 million to finance a full-scale renovation of Red Rocks Amphitheater, the city-owned performance venue designed in 1941 by Burnham F. Hoyt. Later, he endorsed November ballot proposals that could raise $268 million to expand the convention center, $62 million to renovate the Denver Zoo, and $63 million for an addition to the Denver Art Museum.

David Hill, a frequent contributor to RECORD, lives in Denver.

A joint venture called Odyssea designed the new Ocean Journey aquarium (above, fronting the downtown skyline); ELS/Elbasani & Logan Architects' Denver Pavilion is expected to revitalize the upper downtown area.

Traditional tastes

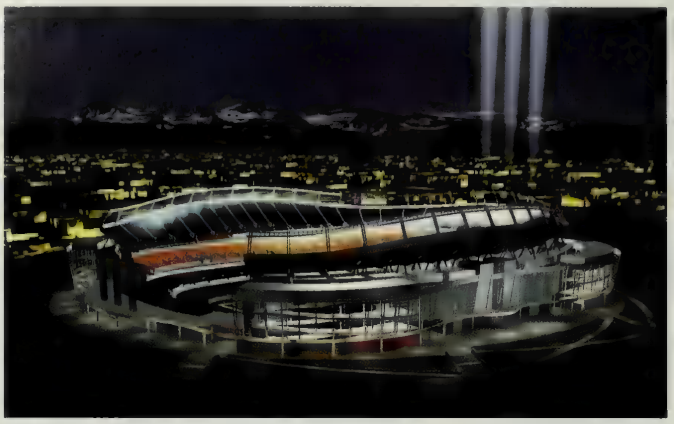
The art museum, built in 1971 and designed by Italian modernist Gio Ponti with James Sudler Associates, has long been one of Denver's most controversial buildings. In his guidebook *Buildings of Colorado,* critic Thomas Noel praised the museum's interior galleries but condemned its "slabby exterior walls" made of gray Corning glass tiles "which give it the look of a fortress protecting its loot from the hordes." Lewis Sharp, the museum's director, wants the addition to be "a signature building designed by an international architect," and he plans to hold an open competition to make sure that happens. But don't expect a Gehry or Foster to win—when it comes to architecture, Denverites play it safe.

Consider what happened recently when Denver architect Ron Mason, FAIA, of Anderson Mason Dale recruited Swiss modernist Mario Botta to design a "millennium marker" in front of the city's 1912 Beaux Arts Union Station in the Lower Downtown National Historic District, known as LoDo. Botta flew to Denver and presented his decidedly nontraditional plan, which features two large stone slabs tilted toward each other with a pool of water in between. Intermittent beams of laser lights would connect the stone anchors, forming a sort of arch. City council member Susan Barnes-Gelt praised Botta's concept as "the most exciting project the city has had in decades."

But the critics howled. "The proposed design looks like acoustic ceiling tiles," cried the *Denver Post.* "Garish and clunky," opined the *Denver Rocky Mountain News.* Mason suddenly found himself on the defensive. "The millennium marker is about vision," he wrote in a letter to the *Post.* He now says, "There are some people who are just dead set against it. Whenever you do something that is really challenging, some people are going to get upset. But I want to feel like it's been given a fair chance."

While Mason battles on, others have had little trouble finding work in LoDo. At one end of the neighborhood sits Coors Field, the red-brick, old-style baseball stadium designed by

HOK Sport of Kansas City, Mo. Since it opened in 1995, many of LoDo's 19th-century commercial buildings have been converted into high-priced lofts, and people flock to the area's restaurants, bars, and art galleries. Three new office buildings are under construction in LoDo, including one designed by a team of Hartman-Cox of Washington, D.C.; Quinlivan Pierik & Krause of Syracuse, N.Y.; and David Owen Tryba Architects of Denver. Called 16 Market Square, the eight-story, mixed-use structure employs historical design elements and building materials to fit in.



The new football stadium, by HNTB, will be something of a departure for Denver.

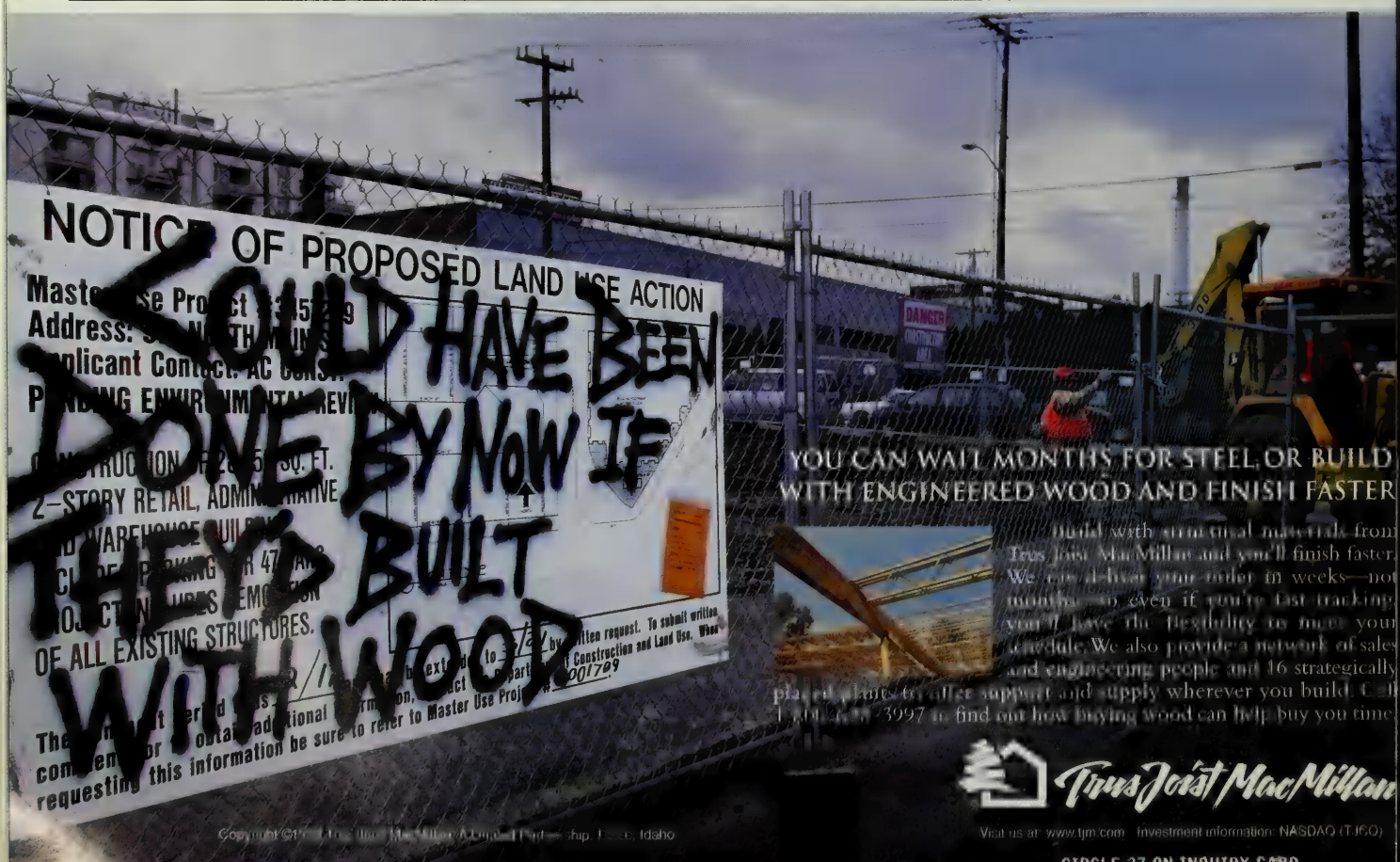
Shopping spree

Even the city's upper downtown area, which used to be practically deserted after dark, is showing signs of life, thanks in part to a new shopping center on two long-vacant blocks facing the 16th Street pedestrian mall. Designed by ELS/Elbasani & Logan Architects of Berkeley, Calif., the 350,000-square-foot Denver Pavilions complex contains a restaurant, movie theater, and bookstore, among other retailers. Made up of four separate three-story buildings linked by bridges, escalators, and elevators, the Postmodern complex is open to the elements, unusual for cold-but-sunny Denver. The scale is in keeping with most of the surrounding buildings, some of which are more than 100 years old. But the effect is cheapened by a gigantic sign, 147 feet wide by 35 feet tall, that spells out DENVER in thin red letters. It's eye-catching in a Las Vegas sort of way but, because of its location, is impossible to read unless you're directly in front of it.

City officials want the center to spark a revival of the once-thriving commercial strip, which was turned into a pedestrian mall by I.M. Pei & Partners in 1982. And developer W. Scott Moore still hopes to build his Trango Tower, an 86-story, mixed-use building designed by Los Angeles architect Richard Keating, FAIA. Named after a 20,469-foot-tall granite dagger in Pakistan, the wedge-shaped tower will resemble a knife blade piercing the sky—if it gets built. Some critics have deemed it "simply too radical" and "too tall" for Denver's skyline.

Sandwiched between the downtown area and Interstate 25 is a huge parcel of mostly privately-owned land known as the Central Platte Valley. The city of Denver was founded here in 1858, after gold specks were discovered in the river. Now the site, sliced in two by the South Platte River, is the scene of Denver's hottest urban infill project, the result of a comprehensive plan by Webb to revive the area.

Several years ago, Elitch Gardens Amusement Park relocated to the area. Eventually, the valley will contain an entirely new neighborhood, with 2,000 high-density,



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multifamily housing units, offices, shops, and hotels. The area will be connected to the rest of downtown by a 125-foot-long asymmetrical single-masted cable-stayed bridge, designed by ArchitectureDenver, that will carry pedestrians over the railroad tracks. The Central Platte Valley's first residents in nearly a century live in a converted flour mill, a seven-story brick and concrete structure with three silos on one end. A decrepit eyesore since the mid-1970s, the mill was converted into 17 luxury lofts by Denver's grande dame of historic preservation, developer Dana Crawford.

Other pieces are falling into place in the Platte Valley. Colorado's Ocean Journey, an aquarium overlooking the river, opened in June to huge crowds. Designed by Odyssea, a joint venture of two Denver firms, Anderson Mason Dale and RNL Design, the $93 million facility is a red-brick box wrapped on two sides by a rolling wave of glass, which forms a striking facade and interior atrium. (RNL has also completed a design for the 74,000-square-foot Cable Center on the University of Denver Campus, which will serve as a telecommunications hub and museum when it opens in 2001.)

Near the aquarium, the mammoth 1901 Denver Tramway Powerhouse Building, a transportation museum since 1969, is being transformed into Recreational Equipment's (REI) flagship store, with Seattle's Mithun Partners doing the design. The interior has been gutted to make way for 80,000 square feet of retail space, while the neoclassical red-brick exterior, with its roundel windows and corbeled arches, will be left mostly intact.

Vision: mile high or myopic

Nearing completion is the Pepsi Center, future home of the Denver Nuggets and the Colorado Avalanche. The 20,000-seat arena, also by HOK Sport, is an oval-shaped container with angular glass wings that jut off to form entrances. It will replace obsolete McNichols Arena, which in turn will be torn down to make room for a new football stadium to replace the rusting Mile High Stadium. Designed by HNTB Sports Architecture in conjunction with Fentress Bradburn Architects and Bertram A. Bruton and Associates, the football facility will be something of a departure for Denver, where red brick and pink sandstone are ubiquitous; the horseshoe-shaped complex will have curvy lines and a smooth, aluminum skin (though a token amount of bricks will be used on the base).

ArchitectureDenver's proposal for a downtown pedestrian bridge.

Meanwhile, an even larger infill project—4,700 acres—is slowly taking shape at Denver's old Stapleton International Airport, closed since 1995. Over 30 years, the site will be transformed into a mixed-use extension of the city, with New Urbanist-style homes, schools, and businesses, as well as parks and open space. Webb touts the project, along with several smaller ones, as an antidote to unbridled growth.

Amid all the cranes, Mario Botta is scheduled to return to Denver to present a lecture at the Denver Art Museum and, no doubt, to defend his controversial millennium marker. But it remains to be seen whether Denver, which has broken free from recession, will also shed its knee-jerk architectural traditionalism. ■

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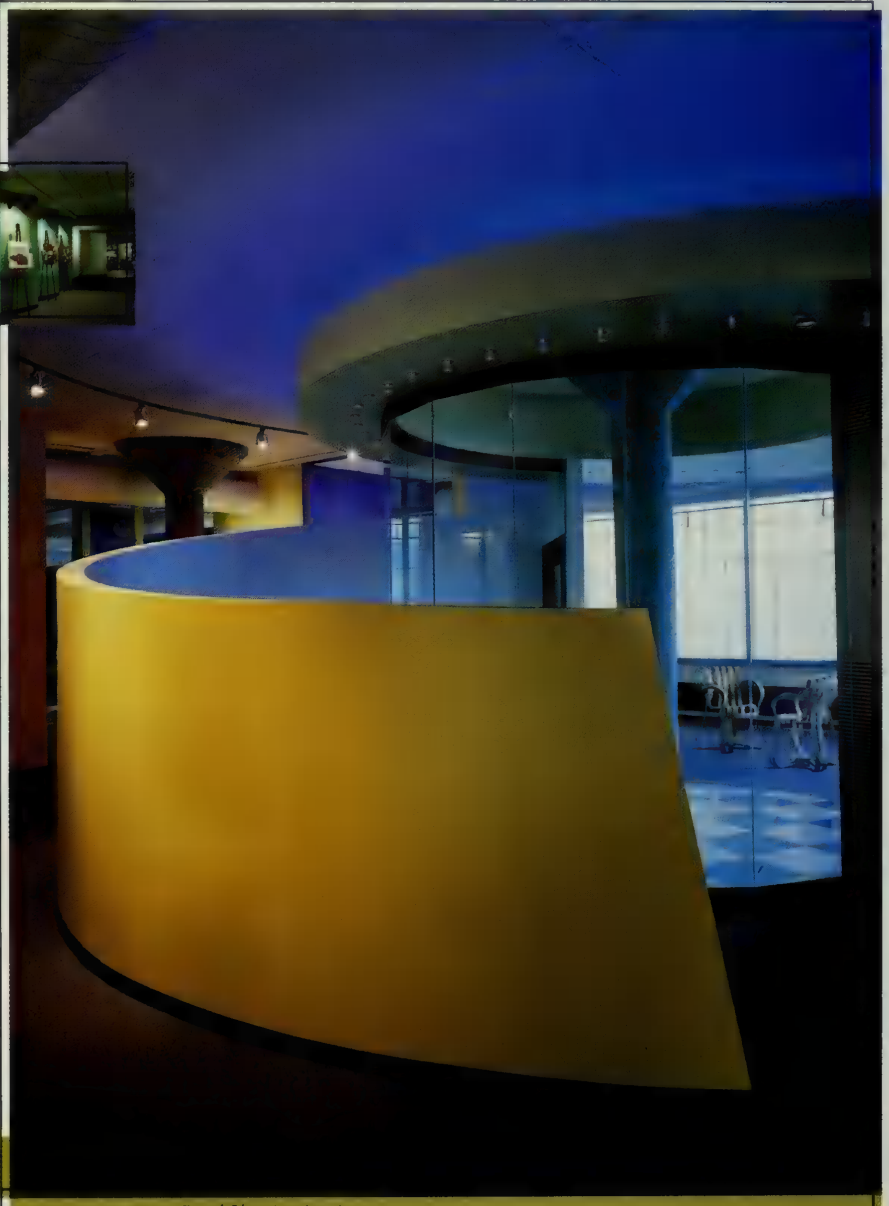

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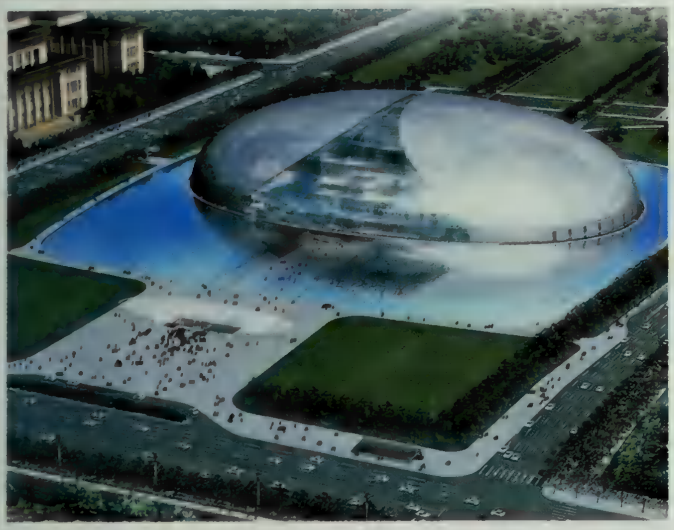

SURPRISE! CHINA PICKS FRENCHMAN TO DESIGN ITS NATIONAL THEATER

The Chinese government has picked a winner after undertaking a year-and-a-half-long competition to design a new national theater complex in Beijing, and the architect is—a Frenchman.

Paul Andreu, director of architecture at Aeroports de Paris (ADP), was chosen in August to design the $300 million-plus National Grand Theater, which is slated to open in 2002. His concept was selected over dozens of entries, about half of which came from Chinese architects. The government's plan to build an opera-house complex was revived in 1997, after plans dating to the 1950s were aborted. The government then organized the invitation-only international design contest in 1998.

Andreu—who has designed major airports around the world, including Roissy-Charles de Gaulle in Paris and the forthcoming airport in Shanghai—has developed a scheme with a huge, oval titanium outer shell housing a central glass structure in the shape of a curtain. The building will sit like an island in the middle of an artificial lake that will be surrounded by landscaped parks. The main entry is via an underpass below the lake. The complex will include a 2,500-seat opera house and three other performance auditoria, with seating capacities ranging from 500 to 2,000 persons.

As startling as the choice of a European designer will be the design's impact on its context. The facility will sit in the heart of Beijing's historic center, next to Tiananmen Square and near the Qing facade of the Forbidden City. As the first example of contemporary Western architecture to be built in the neighborhood, the theater will add a strikingly different presence to the area.

According to reports, Chinese architects initially feared the government's choice of design would be too conservative—but now there is fear that the proposed project is too radical for its surroundings. In addition, the choice of a Western architect was highly unexpected. But the theater is also symbolic of how China is becoming modernized.

Andreu is working on the project with a team of ADP architects and engineers, along with the French design firm SETEC. The Centre Scientifique et Technique du Batiment will work on the acoustics and Rioualec is involved in the theater design. *Soren Larson*

EISENMAN TO DESIGN CULTURAL COMPLEX IN SPANISH PILGRIMAGE CITY

Fresh off winning a competition to propose rejuvenation schemes for a section of Manhattan's West Side, New York City architect Peter Eisenman, FAIA, has been selected to design a vast new cultural complex in the ancient pilgrimage town of Santiago de Compostela, Spain. And unlike the New York undertaking, which was sponsored by the Canadian Centre for Architecture to spur original ideas about urban design, the Spanish project has government backing and looks likely to reach fruition.

An international jury unanimously chose Eisenman Architects to design the $120 million "City of Culture" in Santiago de Compostela, which is being sponsored by the regional government of Galicia. Eisenman was picked from a group of 12 finalists, including Spanish architects Manuel Gallego, Cesar Portela, Ricardo Bofill, Juan Navarro, and Santiago Calatrava, as well as Steven Holl, AIA, Annette Gigon and Mike Guyer, Rem Koolhaas, Daniel Libeskind, Jean Nouvel, and Dominique Perrault.

The Galician government hopes to begin construction on the project next year, although financing from various public and private sources is still being finalized.

Pilgrim's progress

The new 600,000-square-foot complex, including two museums, an auditorium, opera house, library, lecture hall, media center and archives, will be constructed along the top of a wooded hill—one of seven ringing the city—on a 173-acre site. Eisenman's undulating, half-buried design (below) is inspired by both the ribbed, fan-shaped shells that are a traditional symbol of the city and its religious pilgrims and by the city's dense historic core, which the architect also compares to a shell.

Santiago de Compostela is the final destination of the Way of St. James, an ancient Christian pilgrimage route; the Abbey at Roncevalles in France, starting point for the journey, was built by Charlemagne. In medieval times about 500,000 pilgrims passed through the city each year, and tens of thousands still do—mainly during the summer, though the parade never stops. Now, the religiously devout might be joined by architectural pilgrims seeking out the latest in modern design. *S.L*

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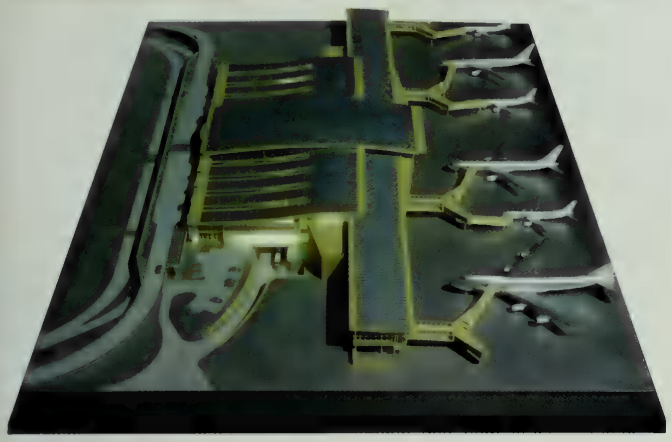


CANADIAN TO PROVIDE DESIGN OF NEW MONTEVIDEO AIRPORT

The MVD Consortium, led by airport management firm Vancouver Airport Services, is headed for South America. The group submitted the winning bid and has secured a $180 million contract to design and build the new Carrasco International Airport in Montevideo, Uruguay, as well as operate it for the next 25 years. Assuming construction commences at the end of 2001, the building will be completed by the end of 2003.

The designer of the new airport is Vancouver-based Architectura, the lone architecture firm in the consortium. Architectura prepared for the project by spending time in Uruguay to learn firsthand about the country's topography and culture. As a result, the design incorporates much Uruguayan art and sculpture, with the terminal designed to provide a showcase for the work of local artists and sculptors.

According to the architects, the passenger terminal's design borrows from the rolling topography of the Pampas—the rippling forms of Uruguay's grassy plains and sand dunes—to create roof forms that sweep up to a high vault that encloses a suspension bridge and a mezzanine observation platform. *Soren Larson*

BOVINE BRIGADE INVADES CHICAGO IN A WINDY CITY FUND-RAISER

Chicago is back to being a cowtown. In an event called Cows on Parade presented by the Chicago Department of Cultural Affairs, more than 300 life-size fiberglass cows are pawing the cityscape through the end of this month. Some of the bovines were painted by local artists, while others are the work of local architects. Other unpainted cows were purchased for $2,500 by patrons and then decorated. The exhibition concludes with a cattle auction, with proceeds going to charity.

Architect Stanley Tigerman, FAIA, contributed Cow(ed), a sliced-up, reclining cow reminiscent of Chicago's stockyards. Helmut Jahn, FAIA's cow is painted midnight blue with fluorescent lines that glow at night. Skidmore, Owings & Merrill held a competition for its Chicago employees; the winning design superimposes a map of Chicago on the cow with SOM's projects highlighted in red. Krueck & Sexton laced cut segments together with stainless steel "to suggest moovement," creating the glittery "Cutting Edge Cow" (below).

As architect Mark Sexton points out, "The cows get people walking, noticing their environment and their urban surroundings." *Susanna Sirefman*

SCIENCE MUSEUM OF MINNESOTA SET TO BE REINCARNATED **Five years of planning, design, and construction will culminate in December when the Science Museum of Minnesota opens a new facility on the Mississippi River bluffs in downtown St. Paul. Designed by Ellerbe Becket, the building enables the 93-year-old institution to expand its stated mission of bringing science alive for visitors.**

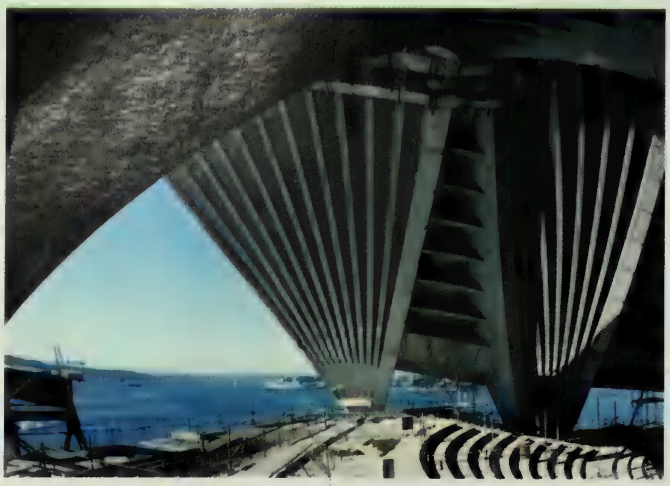
And visitors it has. Serving 1 million people a year in spaces designed for half that number, the museum had vastly outgrown its downtown location. At 370,000 square feet—almost doubling the size of the old—the new museum building's diverse programs will be better represented in a wider array of galleries, theaters, and other amenities.

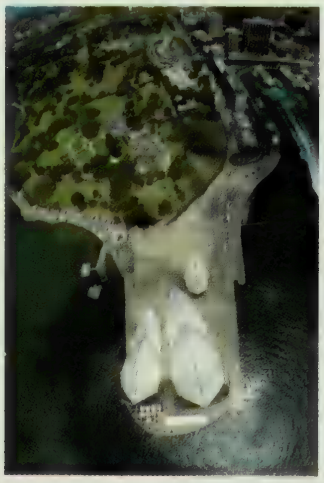
The museum is also renowned for its film and exhibit production, and the new facility will finally offer a setting to fully showcase the museum's own work.

The Science Museum complements a new convention center and hockey arena in the neighborhood, alongside other riverfront development initiatives. The new museum's glass lobby will face the downtown area, and with river valley views beyond, city and river are joined—a primary design goal. Museum terraces and 10 acres of outdoor parks and exhibit spaces will become public pathways, linking downtown and its surrounding neighborhoods with the river.

The Mississippi has long inspired literature and song (see related story, page 59), and now the river basin's new museum is poised to foster exploration and imagination in the scientific arts. ***Todd Willmert***

ARCHITECT OF SYDNEY OPERA HOUSE TAKING CARE OF UNFINISHED BUSINESS





The giant ribs as they looked under construction in 1969 (above); an aerial view of Sydney harbor, with the opera house in the foreground.

A series of subtle alterations to the Sydney Opera House over the next decade will move the building closer to the original, thwarted vision of its architect, Jorn Utzon.

In a long-awaited breakthrough, the 81-year-old Dane—who left Sydney midway through the building's construction in 1966, never to return—has agreed to draw up a statement of design principles for its future, as well as identify which of the hundreds of archival drawings are the most definitive. Utzon departed when only the famous white shells were complete, following a falling-out with the New South Wales government.

According to the chairman of the Opera House Trust, Joe Skrzynski, the statement of design principles—to be published around Christmas—will become a blueprint to set the context for all future work. On an immediate level, it will be the framework within which Richard Johnson, a partner in the firm Denton Corker Marshall, will work to correct the shortcomings that have become apparent in the building's first 25 years.

An array of troubles

Few, if any, of these are attributable to Utzon, because the interiors were done by other architects who took over after his departure. Other problems, says Skrzynski, have to do with the passage of time and changing acoustical standards and demands. Among these are the discomfort of the orchestra pit in the Opera Theatre; faulty acoustics of both the Opera Theatre and the Symphony Hall (the chief conductor of the Sydney Symphony Orchestra, Edo de Waart, has commented that the acoustics are the greatest constraint on the orchestra's development); and inadequate lighting and handicapped access.

Johnson recently spent two intense days talking to Utzon in his Majorca home and says that improving the acoustics could provide an opportunity to change the shape of the theaters and open up an internal vista of the shells, as Utzon had planned. At present, the view into the vault is blocked. Lighting might be used to reinforce the entry as Utzon had intended, via the grand steps and platforms, instead of leading people toward a secondary entrance under the building, as tends to occur now.

Still, it is unlikely that changes will be exactly in accordance with what Utzon would have done 25 years ago. Says Johnson: "I doubt that the design ideas would have changed, because they're all fundamental—but if [Utzon] were developing the detail design proposals, I'm quite confident he would not be implementing those in use 25 years ago.

"At the time he was developing that building," Johnson continues, "he was way ahead of anybody else in the world in terms of ideas, in terms of technology. He would be using materials now that are ahead of their time, and developing new technologies."

Anne Susskind

MINNESOTA MILL TO BE RECAST FOR HISTORICAL SOCIETY

Introducing an edition of *Huckleberry Finn,* T. S. Eliot wrote: "At what point in its course does the Mississippi become what the Mississippi means?" The redevelopment of Minneapolis' historic mill quarter—recapturing the river heritage on the Mississippi's only waterfalls—addresses Eliot's quandary.

The Mississippi's renown begins at St. Anthony Falls, whose waterpower spawned Minneapolis' early industries. Sawmills defined the early city; as timber resources were depleted, flour mills replaced them. Minneapolis was the world's flour capital at the century's turn, a status held until decentralized power, such as electricity, dispersed milling operations. The mill district faced a precipitous decline in the following decades.

This trend has only recently reversed as Minneapolitans rediscover riverfront assets. A key redevelopment component is the Washburn Crosby "A" Mill's adaptive reuse to house the Minnesota Historical Society's St. Anthony Falls Interpretive Center. Mill Ruins Park, riverside excavations of mill channels, will complement the center, as well as other district mills' transformations into lofts and offices.

While designated a National Historic Landmark in 1976, the "A" Mill's floor plates were too deep for ready rehabilitation as housing or commercial space, limiting prospective uses. A 1991 fire that turned the historic building into a stone shell of jagged walls had the unlikely consequence of galvanizing options: the fire created an "atrium" space in the mill, wrapped by massive masonry walls.

The new center will celebrate the milling process, with a broader goal of addressing the falls that powered growth in the entire upper Midwest, as well as its people and industries. Now in initial design stages, the center will feature the atrium as an entry and performance/gathering space. The multiple mill appendages, such as the wheelhouse and flour tower, will be left intact.

The Historic Society and its architects, Meyer, Scherer & Rockcastle, envision a center where new construction complements the mill's wood, masonry, and steel. Such a strategy—preserving the existing structure through juxtaposition—is especially appropriate in the "A" Mill case. Not only is there beauty in its utilitarian roughness and material, but also the complex is essentially a grave to dozens of workers—a testament to the dangerous mill explosions. Maintaining and reinforcing its essence speaks to this history. ***Todd Willmert***

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PARKER'S SEOUL POWER The Leonard Parker Associates of Minneapolis, in association with Korean firm Kun Won Architects, has won a competition to design a luxury project in Seoul that will be the tallest housing complex in Korea. The goal of the firm's design for the Hyundai SamSung Dong apartments was to create a residential oasis within the bustling core of the city.

The 1.5 million-square-foot, $85 million project will consist of 350 high-priced condominiums in three 48-story towers. The site boasts views of the Han River and will be elaborately landscaped with trees, terraces, and gardens. Also included: underground parking, retail outlets, a health center, and public gathering areas. Completion is scheduled for December 2002. *Soren Larson*

SHELL COMBINES ITS LONDON HOMES

Shell International, the multinational oil company, has hired the Canadian firm Zeidler Roberts to plan a $100 million to $150 million transformation of the Shell Centre, one of its three Thames-side London headquarters, into revamped offices and an urban entertainment complex. The oil company recently sold its downstream offices to a residential developer, and it is looking to sell its highest profile north bank headquarters, Shell Mex House, which will leave the Shell Centre as the company's main base.

The Shell Centre building, designed by Howard Robertson in the 1960s, provides 40 acres of floor space on 7.5 acres of land. When it was built, it was criticized for what Carl Mortished of the *London Times* described as "symbolizing a culture of corporate arrogance and secrecy and for presenting a bleak, unfriendly front."

In addition, since it's on the South Bank site of the postwar Festival of Britain—which spawned a new generation of inspirational modern buildings including the Dome of Discovery and the Skylon Tower—this was considered to be doubly disappointing.

Shell is keen to emphasize that its new plans for the Shell Centre are in keeping with the lively cultural spirit of the South Bank. The focus is on transparency, introducing glass frontages to the ground floor which, along with the extensive basement areas, will be open to the public.

Although Shell employees will retain 550,000 square feet of office space, they will lose their private gym and health club. Plans for the 350,000-square-foot ground floor, basement, and sub-basement entertainment complex have not been finalized, but a combination of facilities, such as a multiplex cinema, a health and fitness club, a range of cultural and entertainment facilities, restaurants, and other retail outlets, are being considered. *Katherine MacInnes*

A VANCOUVER TOWER UNDERGOES THE GREENHOUSE EFFECT

Busby & Associates Architects of Vancouver is transforming one of its hometown's buildings into an ultramodern, "green" structure. The firm is placing a new double-glazed, aluminum curtain wall about three feet away from the original wall of the 1940s, eight-story building, effectively creating a greenhouse—as well as the first triple-skin building in North America, say the architects.

The new double-glazed skin—the primary feature of an $8 million renovation of the 127,000-square-foot BCT Telus Communications operations building—employs technology pioneered in Germany, according to principal Peter Busby. The original brick veneer, which was mainly decorative, is being stripped from the existing building and the ultimate treatment of the remaining concrete surface has not yet been decided.

Windows that actually open

Busby does plan to return the original single-hung windows to working condition. The repaired windows in the existing building will be manually operable, and the windows in the new external skin will be individually operable by push button.

"The space between the new and old envelopes will act as a greenhouse, storing heat in the winter, providing shade and diverting heat from the existing windows in the summer. Vents at the top and bottom will allow for air to be flushed out as well," explains Busby. He claims the completed structure will be "the most energy efficient building in Canada, with energy consumption expected to be 47 percent of comparable buildings." Busby's firm is becoming known for its environmentally responsible, energy-efficient design, including the award-winning Revenue Canada office building near Vancouver.

The project should be completed by December 2000, and Busby promises it will be moisture proof, which is critical, considering the city's climate: "We couldn't have a leak. Almost every telephone line in Vancouver goes through the building." *Albert Warson*

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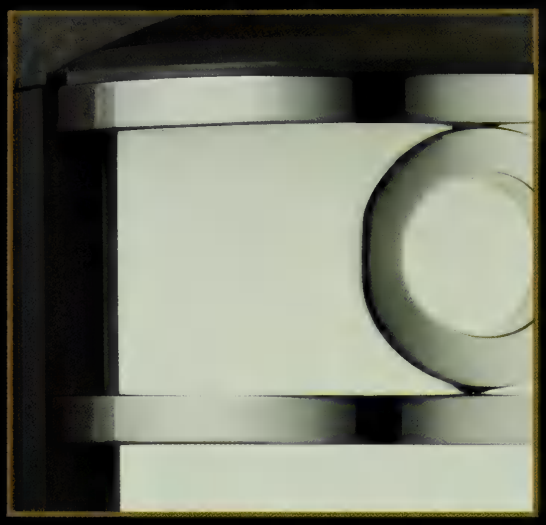

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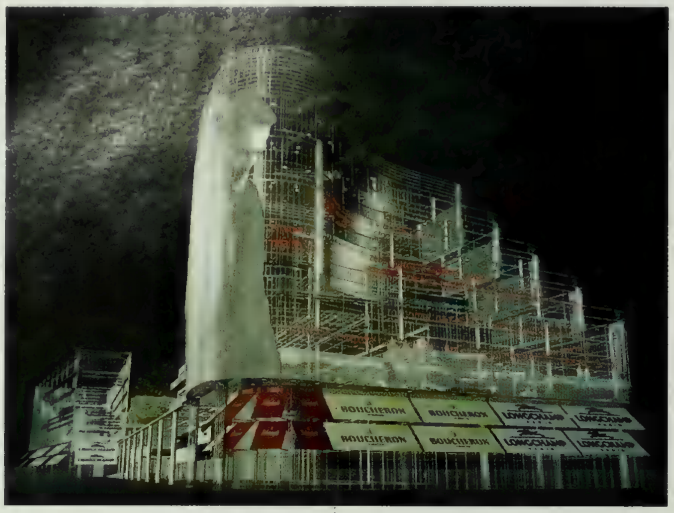
CIRCLE 36 ON INQUIRY CARD

ENDURING OBSTACLES AND ANGST, NOUVEL'S PRAGUE PLAN PROGRESSES



Jean Nouvel's Golden Angel office tower in Prague is now scheduled to open in November 2000, but it has already weathered both official and unofficial local criticism for more than 10 years.

The building is a prelude to Nouvel's more ambitious Angel City plan for Prague, which when completed will encompass 650,000 square feet of office space, nearly 100,000 square feet of retail space, and more than 105,000 square feet of apartments and accompanying recreational areas.

Criticism of Golden Angel, which has primarily come from local architects, has focused on its scale, materials, and—perhaps most intently—imagery. Golden Angel, actually four linked buildings, will feature a white-and-gray concrete frame visible beneath the 106-foot-high glass outer wall of the main facade. The building varies from five to seven stories and is linked by covered walkways and passages.

An unexpected angel

What has stirred some drama is that Nouvel has incorporated the image of a guardian angel on the facade of the tower, which faces the Vltava River and the 10th-century ruins of Vysehrad on the opposite bank. The proposed "angel," controversially, is a still of Bruno Ganz, the actor-angel from Wim Wenders' 1987 film *Wings of Desire*. The wraparound glass facade will also feature images of clouds drifting across the glass curtain wall and snippets of Czech poetry on the subject of angels.

Golden Angel is sited on a main thoroughfare in Smichov—an aging 500-acre industrial sector of the city—and sits above the Andel (Angel) subway station that serves upwards of 20,000 passengers a day. The structure will include 140,000 square feet of office space and 75,000 square feet of retail. Scheduled retail components include a department store, a Dutch supermarket franchise, numerous small shops, and a 224-space parking garage.

Transforming a neighborhood

Funded by the Dutch-Swiss financial services consortium ING, the same firm that brought Prague the controversial Frank Gehry-Vlado Milunich Dancing Building (aka the Fred and Ginger building), Golden Angel is expected to cost between $27 million and $28 million. It will be the first step toward transforming Smichov into an alternative city center, less for the 12 million tourists that descend on Prague each year than for besieged locals.

Nouvel's 1985 planning study for Smichov adheres to the architect's theory of "spot intervention," or strategic insertions meant to release latent urban energy ("urban acupuncture"). Nouvel's Angel City, immediately behind Golden Angel, will include a multiplex cinema, restaurants, small shops, a bowling alley, and apartments.

A third non-Nouvel component, New Smichov, yet to be fully funded, is also planned. Construction is ready to start, given the immense hole in the ground at the site of a former Tatra car-parts factory.

Gavin Keeney

Jean Nouvel's Golden Angel office tower is causing a stir among Prague architects (top left); the Golden Angel site in Prague's city plan (above).

DEPARTMENT OF TRANSPORTATION TO ENGAGE ARCHITECTS To highlight superior design linked to moving people and goods, the U.S. Department of Transportation (DOT) is seeking applicants for a new awards program. Eligible entries could range widely, including plans, signs, art, roads, bridges, airport terminals, and rail stations. Eligible projects must have been completed and in use in the U.S. or its possessions between March 1, 1995, and June 1, 1999. Applications are due November 1, and the awards ceremony is scheduled for May 16, 2000.

According to DOT Secretary Rodney E. Slater, "Good design enables us to get where we need to go more safely, efficiently, and economically, while it enhances livability by adding beauty to our lives and enriching our communities."

There are six award categories: 1) architecture, which includes terminals, stations, ports and other facilities; 2) engineering, energy conservation, technology, and systems, which encompasses highways, bridges, tunnels, overpasses, vehicles, and equipment, as well as information, control and navigation systems; 3) art and graphic design; 4) historic preservation and adaptive use; 5) urban design, planning, and landscape architecture; and 6) "special emphasis," defined as "entries that enhance livability and accessibility of communities and regions through measurable improvements in the quality of life."

In addition, the DOT says projects must meet at least one of its goals—to promote safety, mobility, national security, economic growth and trade and to protect and enhance communities and the environment. The projects must show innovation, aesthetic sensitivity, effectiveness and efficiency, and "reasonable costs in relation to benefits."

A 1995–96 DOT design competition drew 306 entries; if the new program is as successful as the last, the DOT hopes to repeat it about every five years, says Bob Stein, a senior policy analyst at the department and one of the officials administering the program. Application forms and guidelines are available on the Internet at http://ostpxweb.dot.gov/. *Tom Ichniowski*

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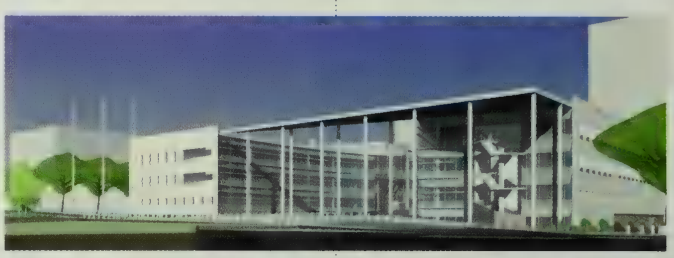
COMPLEX SECURITY ISSUES AFFECT MURRAH REPLACEMENT

Chicago's Ross Barney + Jankowski met with the peer review panel of the General Services Administration's (GSA) Design Excellence Program last month to examine the firm's latest design for Federal Campus, the replacement facility for Oklahoma City's Alfred P. Murrah Federal Building. While security issues are key, the goal, according to GSA chief architect Ed Feiner, FAIA, is to avoid creating a fortresslike impression.

"The structures have been totally rethought," he says, "so that we would not have a recurrence of the kind of collapses that occurred in Oklahoma City and at the barracks in Saudi Arabia. But generally, the goal is that these are not bunkers; these are public buildings and they are to express to the public that they are public buildings."

Discussing her design (right), Carol Ross Barney, FAIA, explained, "The idea of stand-off, especially for automobile traffic is important, so we spent time looking at different ways of providing a vehicle barrier while keeping the site open. Some of the solutions we've come up with include landscaping and street furniture, in addition to plain old bollards. And we're also looking at collapsible grades. The other thing, and this is sort of a novel notion here in the Midwest where we don't deal with hurricanes and earthquakes, is to resist progressive collapse."

States Feiner, "The most important thing is that the security enhancements are transparent to the general public. If we can't build buildings that the public feels are theirs in their own country, then we have a problem. Ultimately, you could stick things underground—who wants that?" *Thomas Connors*



AMERICAN TEAM TO DEVELOP NEW UNIVERSITY CAMPUS IN EGYPT

The 80-year-old American University in Cairo (AUC) is embarking on a $200 million project to create an entirely new campus that weaves together both Egyptian and American design attributes.

An independent jury hired by the university has chosen two Cambridge, Mass.-based companies—architecture firm Boston Design Collaborative (BDC), in partnership with landscape architecture firm Carol R. Johnson Associates—to develop a master plan for the new campus. Once the plan is established, it will enable AUC to relocate most of its operations from its old location in Cairo's city center to a 260-acre site in New Cairo within six to eight years. New Cairo is a planned development that is transforming an expanse of unpopulated desert east of Cairo into a hub that will reach 2 million residents or more.

AUC was founded in 1919 by a group of U.S. citizens. The nonprofit and self-proclaimed "apolitical, non-sectarian" institution has a faculty of both Egyptians and Americans and a current enrollment of 4,500 full-time students. AUC's new campus will comprise around 2 million square feet and has a construction budget of about $200 million.

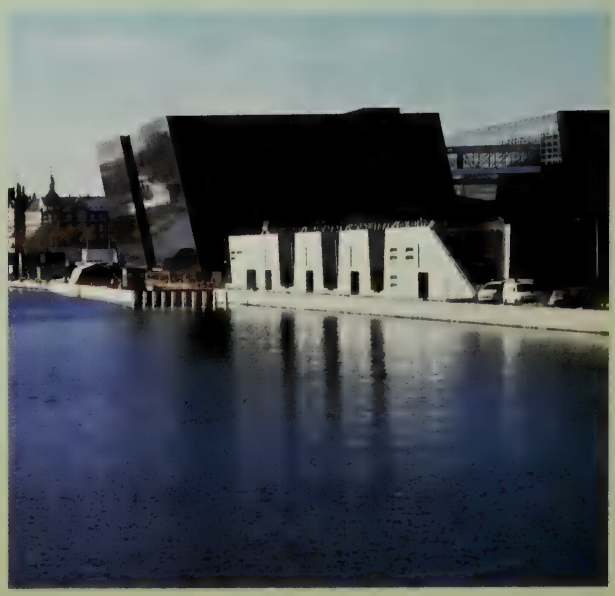
BDC and Carol R. Johnson—already working together on the campus of Koc University in Istanbul—will emphasize creating interrelated and interconnected outdoor and indoor spaces. *Soren Larson*

COPENHAGEN MINES A "BLACK DIAMOND" ON PRIME LOCATION

A long-awaited extension to the Royal Library of Denmark, a black-granite mass already nicknamed the Black Diamond, opened its doors last month on Copenhagen's waterfront. The seven-story building, which commands a strong presence on the city's relatively low-lying skyline, doubles the Royal Library's size to a total of over 120,000 square feet. The design is by the Danish firm Schmidt, Hammer & Lassen, which won an international competition for the $71.5 million project in 1993.

The new building's facade—a striking contrast to the library's other buildings, which date to 1906—is covered with reflective black-granite tiles mined in Zimbabwe, cut in Portugal, and polished in Italy. The exterior walls slant sharply forward toward the water.

Apart from housing 200,000 books, the Black Diamond will feature a bookshop, a restaurant with a harbor-front view, six reading rooms, a courtyard for exhibitions, and a 600-person hall for concerts and meetings. The city also plans to build a new square next to the library with steps down to the water—a new public space for the Danes. *S.L.*



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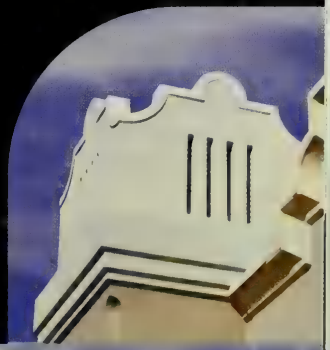

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THE NEA'S MARK ROBBINS: SPURRING THE DESIGN DIALOGUE

Seven months after becoming director of design at the National Endowment for the Arts (NEA), Mark Robbins is toiling away on a group of new programs he thinks can make a positive impact on the country's built environment. Now, he's on tour: Robbins will be making stops around the country for the rest of the year to tout his four "leadership initiatives."

In the first initiative, New Public Works, the NEA will sponsor a series of design competitions for a range of projects, from public buildings to master plans to graphic, landscape, and industrial design projects. Starting next year, up to 10 projects will receive grants of up to $50,000 each. The second initiative, Redressing the Mall, will focus on failed, older suburban malls for which the NEA hopes to generate alternative development models. A third initiative, the Mayors' Institute for City Design, will bring mayors together with design professionals. The final initiative is called Your Town and will build on an NEA/National Trust program that works with rural groups—starting with African American and Native American communities—on design issues such as growth and suburban sprawl, historic preservation, land use, and housing.

Before jetting off to present his initiatives in California, Robbins—an architect, artist, and professor who was curator of architecture at Cincinnati's Wexner Center for the Arts before joining the NEA—stopped by RECORD's offices for an interview, of which excerpts follow.

RECORD: To start with, why should the government be involved in design and architecture?

Robbins: That's a fundamental question. Obviously, I think it should. We're the wealthiest country in the world, but I look at the quality of our public spaces and our public buildings, and I compare that to the quality of work that we see in Europe, and it falls short. In Barcelona, for instance, there are fantastic blocks of new housing that were originally built as part of their Olympics celebration. They thought about redesigning whole quarters of the city and then turning those over to public or semipublic usages. It's hard for me to think of any similar models in the U.S.

Our government has taken a much more hands-off attitude, and we've left most development to market forces. This isn't to say that using market forces as an engine is a bad idea. But a market is involved with increasing its own profits—that's what it does. The government can provide for the public good in a way that's not the mission of the market. It seems to me wholly appropriate that a government

agency thinks about the design and quality of the public sphere, which is about how we design our buildings, how we design our plazas, how we zone our spaces.

Take sprawl as an example. If we continue to build where the market is wont to build—where land is cheapest, generally at the periphery—we expand the infrastructure further from the city center. There's a downside in terms of our general health and welfare: increased pollution, increased use of gas and energy. At some point, you need to make a decision about whether that's an appropriate development model, and our programs can help people understand their design and planning options and act on them.

RECORD: What specifically is the NEA looking to accomplish? What effect can you have?

Robbins: First, I want to develop a greater public awareness of the influence of design—it's something we live with but I think most people who aren't involved with the design professions aren't so conscious of. Second, I want to provide service to the design disciplines themselves. There are certain needs that aren't funded by the market that we can act as a catalyst for, say, thinking about landscaping and how it can have an impact on the built environment and the culture in a broader sense.

The third way is to partner with other governmental agencies. We can look at natural partnerships, certainly with the General Services Administration, which has been interested in improving the quality of the design of buildings and thinking about the impact of projects on their surroundings. It's not just looking at the object and making sure it's a swell piece of architecture, but making sure it's integrated in a positive way with the urban context.

There are natural partners, like the GSA, like HUD, but then there are less expected partnerships, like with the EPA. We're working on some programs with the EPA to think about the ways that designers can work to reclaim superfund sites.

RECORD: What can the NEA do to help architects, and how can they get involved in the programs?

Robbins: Some of the benefits are indirect. The NEA funds exhibitions about cities, about urban design, about individual architects . . . many of these have a public education component. Whenever you have an informed public, you have a better, informed client. This helps architects strategize with the client as to how to make a good piece of work.

We're bringing mayors together with architects and city planners and zoning practitioners. This helps mayors who don't have [an urban-planning] background figure out how design can be part of their mission in redeveloping their cities. It will help when a mayor begins to structure an urban design plan for the downtown or thinks about selecting a designer for a public plaza, because you'll have a mayor who's been exposed to what design can do.

Individual architects can't apply directly. But if, say, some architects came in for a grant to look at models for affordable housing—and this consortium came in through a city design center or regional housing authority—we would help fund the investigation into how design could make better spaces in their community. Ultimately, the benefit is for all of us in the public sphere.

RECORD: Is there a particular aesthetic you look for, or one that you frown on and want to discourage?

Robbins: I would like to see the NEA as ideologically unaligned. I think what's significant is the end goal: what we would like to see is an improvement in quality of community life, whether it's in a rural setting or an urban setting or in suburbia. Design is such a subjective thing. So, the government is not here to be an arbiter of taste. What I'd like to do is encourage the best of what design can do, which is help create more livable communities.

Soren Larson

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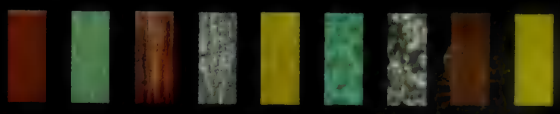
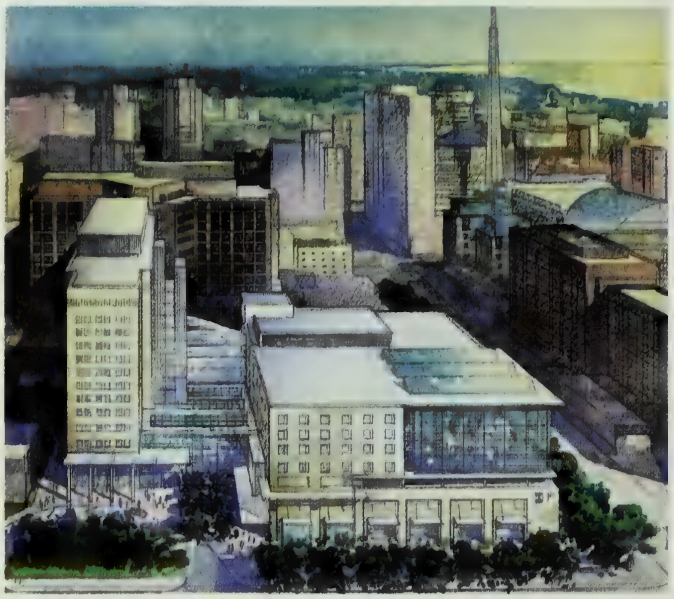


CIRCLE 39 ON INQUIRY CARD

NEWS BRIEFS

Scully takes the prize The National Building Museum in Washington, D.C., has created the Vincent Scully Prize, which will recognize exemplary practice, scholarship, or criticism in architecture, landscape architecture, preservation, or city planning. The inaugural prize will be bestowed on November 12, and the winner is . . . Vincent Scully, who has been teaching since 1947 and now divides time between Yale and the University of Miami. The museum intends to raise a $500,000 endowment and will award annual cash prizes of $25,000. The award's inaugural committee included Frank Gehry, FAIA, Richard Meier, FAIA, I.M. Pei, FAIA, and a lengthy list of other design notables.

Noting the needy The 2000 World Monuments Watch List of 100 Most Endangered Sites, compiled by the World Monuments Fund, was announced last month. The listed structures, man-made landscapes, city centers, and archaeological sites are endangered by war, neglect, natural phenomena, sprawl, or governmental policies. Among the more well-known sites are Machu Picchu in Peru and Teotihuacán in Mexico. A total of 9 are in Africa, 21 in Asia, 8 in the Middle East, 13 in Western Europe, 24 in Eastern Europe, 10 in North America, and 15 in South America and the Caribbean. Perhaps the most unlikely is the 117-year-old Seventh Regiment Armory, which sits on New York City's posh Upper East Side.



HOK's Toronto design is said to be North America's largest health-care project.

A healthier Toronto The New York office of Hellmuth, Obata + Kassabaum (HOK) is designing what it says is the largest health-care project in North America. The design (left) is for 2.5 million square feet worth of additions to and renovations of University Health Network's Toronto General Hospital, which will encompass 14 structures and over 3.6 million square feet when the work is done in 2003.

Miami comeback The Miami Design District, an 18-square-block area north of downtown that was a mecca for furnishings and interior design in the 1970s, is making a comeback after a period of crime and neglect. A new urban plan by

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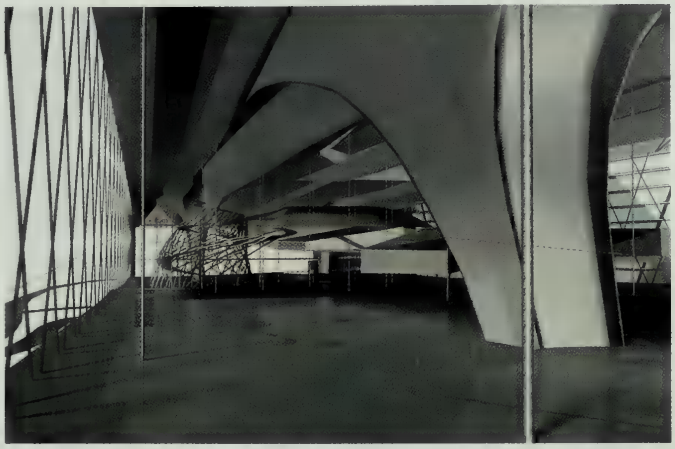
Elizabeth Plater-Zyberk, FAIA, is in effect, and developer Craig Robins has hired architects Walter Chatham and Alison Spear to undertake a revitalization of a number of the site's historic buildings.

Washington's next The Japanese-American Memorial Foundation will break ground October 22 on a new memorial near the U.S. Capitol to honor Japanese-American patriotism in World War II and to commemorate those held in internment camps during the war. The memorial, designed by David Buckley, AIA, with assistance from Japanese-American architects and artists, will feature a granite wall with inscriptions describing early Japanese immigration to America and a centerpiece of two Japanese cranes entwined in barbed wire.

Chrysler's choice The seventh annual Daimler Chrysler award (called the Chrysler award until the companies merged last year) will be presented to six design leaders late this month, including architects Jesse Reiser, AIA, and Nanako Umemoto. The duo was cited for its use of new media and technology that enable modeling of complex, unusual spatial concepts. In addition, Billie Tsien, AIA, and Tod Williams, FAIA—who were honored last year—have redesigned the award itself, which carries a prize of $10,000.

Help for Havana Italy is helping Cuba to ease the danger of building collapses in decaying Old Havana and to rebuild a provincial hospital damaged by a hurricane. About $600,000 will go to reinforce old buildings and to purchase devices to help rescue workers in case of collapses. About 15 to 20 buildings, holding roughly 200 homes, collapse each year in the colonial-era heart of the Cuban capital.

They reign in Spain The Fifth Biennial of Spanish Architecture has announced its selected projects and top-prize winner for 1999. Josep Llinas' Terrassa Library in Barcelona was awarded the Manuel de la Dehesa Prize, besting two runners-up: a housing project in Valencia by Eduardo de Miguel and the Nanclares Civic Center in Navarra by Roberto Ercilla and Miguel Angel Campo. Other projects cited included Alberto Campo Baeza's office center in Palma de Mallorca; the conversion of a convent into a museum in Mahon, Minorca, by Elias Torres & Jose A. Martinez-Lapena; and the conversion of a gas deposit tank into an unusual cultural center in Santa Cruz de Tenerife, the Canary islands, by the team of Felipe Artengo, Fernando Menis, and Jose Maria Pastrana. ■



An inside look at Reiser + Umemoto's design for the Kansai Library.

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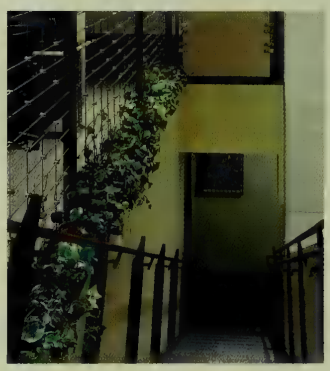
The Green Architect also presents a closer look at newly built structures designed specifically to respect and enhance the environment. The section also highlights more than 50 green products, chosen by our editors for their contribution to green design. Selections are based on criteria ranging from durability to recycled content to emissions. Web addresses for the manufacturers are provided.



LEARN MORE ABOUT EACH OF THE WINNERS OF THE THIRD ANNUAL BUSINESS WEEK/ARCHITECTURAL RECORD AWARDS Visit RECORD online for in-depth information on each of this year's nine winning projects. Along with quotes from esteemed jury members, you'll find details on the architects, engineers, landscape architects, and consultants involved in each award winner. Also included is information on the construction materials selected for each project, such as the roofing, glazing, doors, windows, interior finishes, furniture systems, and more. It's just the kind of information architects can really use.

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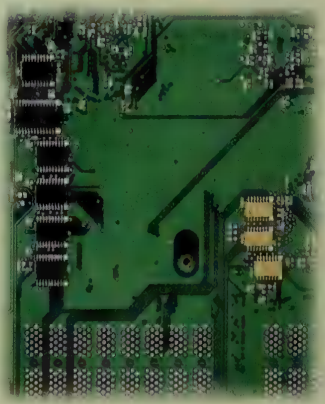
This is rounded out with a new section of product review and listings. Written by Jerry Laiserin, AIA, a computer consultant and contributing editor to RECORD who specializes in information technology, these reviews focus on some of the newest project Web site software. You'll want to check this page frequently as it grows and new companies and products are added to our list!

If you missed it in the magazine, you'll find full coverage of our recent "Listening to Computer Experts" roundtable [August, page 74] on Digital Architect, including Web-only segments that reveal some of the most current thinking on computer issues as they relate



to time management and handling high volumes of E-mail, the future of project Web sites, the integrity of CAD designs, and hardware and software purchasing.

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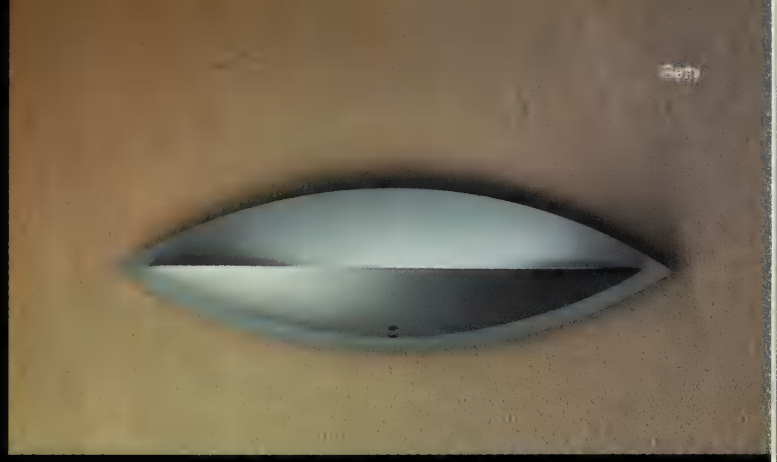

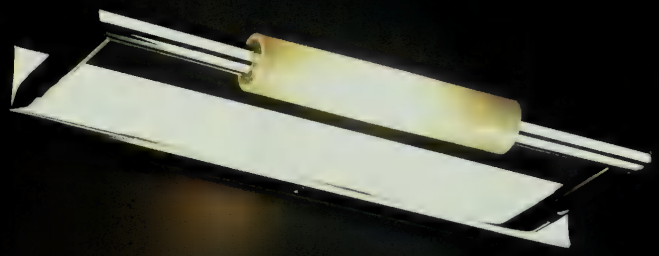

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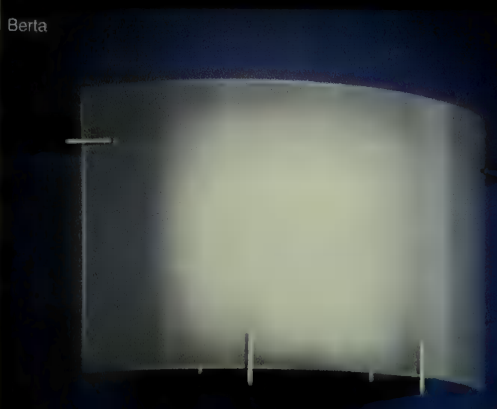

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CIRCLE 42 ON INQUIRY CARD

CNA PRO

DATESEVENTS

Calendar

Breaking Through: The Creative Engineer
Miami, Fla.
October 1–December 31
A look at the role and process of creativity in the field of engineering. Miami Museum of Science and Space Transit Planetarium. 305/854-4247.

The Lamps of Tiffany: Highlights from the Egon and Hildegard Neustadt Collection
Wilmington, Del.
October 8–January 2, 2000
More than 45 objects provide an overview of the achievements in glass by the Corona, N.Y., workshops of the Tiffany Glass and Decorating Co. Delaware Art Museum. 302/571-9590.

The Work of Charles and Ray Eames
New York City
October 12–January 9, 2000
A retrospective of the work of these midcentury pioneers of design. Cooper-Hewitt, National Design Museum. 212/849-8400.

The Corner Store
Washington, D.C.
Through March 6, 2000
An exhibit tracing the history and cultural impact of a vanishing American typology: the local grocery. National Building Museum. 202/272-2448.

Elemental Constructs: Jim Agard
Washington, D.C.
Through October 29
On display are the artist's perception-bending wall structures. The Octagon. 202/638-3105.

56th Annual Sheet Metal and Air Conditioning Contractors' Convention
Palm Desert, Calif.
October 10–14
A wide variety of educational, motivational, and self-developmental sessions presented by industry experts who provide solutions to contractors' problems. Marriott's Desert Springs Resort and Spa. 703/995-4035.

METALCON International '99
Chicago
October 12–14
Annual conference and exhibition focusing on the use of metal in design and construction. Rosemont Convention Center. 617/965-0055.

Design-Build: Reaching for the Leading Edge
Dallas
October 13–15
The three-day event will feature 85 speakers and panelists and showcase products and services that support the design-build industry. Cosponsored by the National Society of Professional Engineers. Adams Mark Hotel. 202/682-0110.

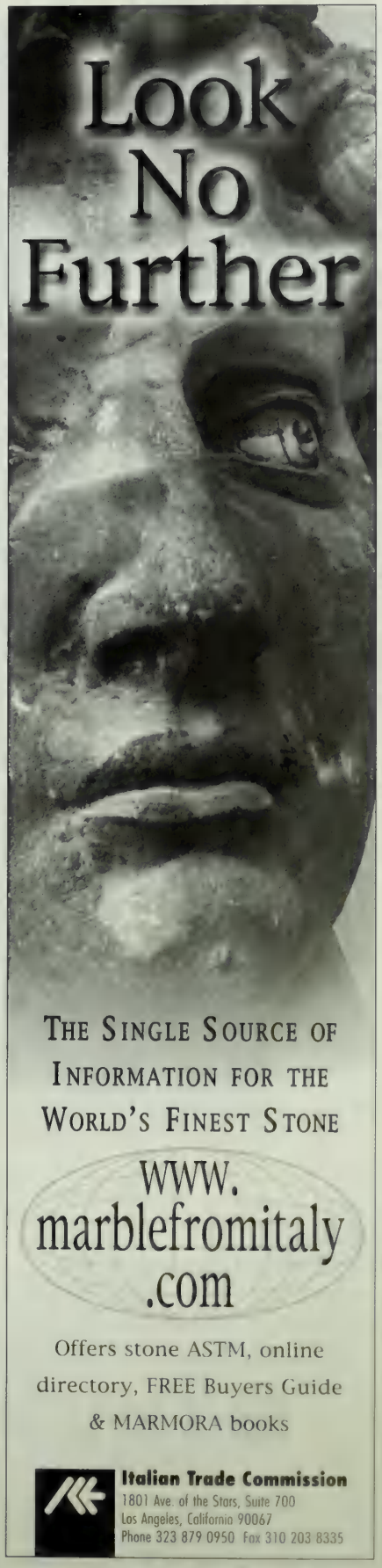
Modern Times
Glendale, Calif.
October 16–17
A wide range of work from the 1920s to the 1970s by American and European industrial and interior designers will be at the 13th annual fall Modern Times 20th Century Design Show & Sale. Glendale Civic Auditorium. 310/455-2894.

Celebration of Design: World Class '99
Dallas
October 27–29
Decorative Center Dallas is holding its second annual Celebration of Design. Three days of activities include showroom seminars, keynote speakers, panel discussions, and the presentation of the first annual Design Achievement Award. Decorative Center Dallas. 214/698-1350.

1999 Remodelers Show
Philadelphia
November 5–7
Industry experts in remodeling, custom building, and seniors housing will participate in educational programs and demonstrations at the National Association of Home Builders joint remodelers, custom builders, and seniors housing show. Philadelphia Convention Center. 202/822-8861.

Restoration & Renovation
Charleston, S.C.
November 7–9
A tradeshow and conference dedicated to architectural rehabilitation, cultural landscape preservation, collections care, and historically inspired new construction. Westin Francis Marion Hotel. 978/664-6455 x0.

The Sense of the City: Louis Kahn's Design for an Office Building in Kansas City, 1966–73
Manhattan, Kans.
Through November 28
An exhibition featuring Louis Kahn's drawings and



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models centered around institutional and public architecture, as well as his design for the unbuilt Kansas City Office Building. Beach Museum of Art. 785/532-7718.

Build Boston
Boston
November 16–18
America's largest AIA chapter holds its annual convention and tradeshow for the building industry. World Trade Center Boston. Call 800/544-1898 or register online at www.buildboston.com.

At Home in Chicago, Part II
Chicago
Through November 28
An exhibition of different types of housing designed by Chicago architects. The Art Institute of Chicago. 312/443-3600.

Atelier van Lieshout
North Miami, Fla.
Through December 5
Visitors to this exhibition of the work of the Dutch collaborative—designers of mutant mobile homes and sensory deprivation units—get to enter a few of the firm's creations. Museum of Contemporary Art. 305/893-6211.

Big Buildings
New York City
October 1–December 31
This exhibition explores a dimension of the skyscraper just as impressive as its height: sheer volume. The Skyscraper Museum. 212/968-1961.

1999 National Preservation Conference
Washington, D.C.
October 19–24
This year's conference gives special attention to the preservation of historic places owned or operated by federal agencies. National Trust for Historic Preservation. 800/944-6847.

School Architecture of Perkins & Will
Chicago
October 20–December 5
An exhibition of school designs by the Chicago-based firm. Chicago Architecture Foundation. 312/922-3432.

AIAS Annual Convention: Forum '99
Toronto
November 24–28
This year's convention of the American Institute of Architecture Students—the first to meet outside the U.S.—features speakers Michael Graves and Moshe Safdie, as well as the Career and School Fair. Royal York Hotel. 202/626-7472.

The Work of Daniel Libeskind
New Haven
October 25–November 20
An installation featuring the design and construction processes of the Jewish Museum in Berlin and other new projects. Yale Art & Architecture Building. 203/432-2292.

Two Views of Venice
New York City
October 26–December 19
An exhibition of rare etchings of Venice by Canaletto, an 18th-century Venetian, and Mortimer Menpes, a 19th-century Australo-Briton. Cooper Hewitt, National Design Museum. 212/849-8400.

IBHS Congress
Memphis
October 26–28
This year's congress of the Institute for Business and Home Safety focuses on planning for natural disasters. Peabody Hotel. 617/292-2003.

Chicago Design Show
Chicago
November 4–7
An exhibition and sale of contemporary furnishings, colocated with the Italian Design Furniture Show. Merchandise Mart. 800/677-6278.

Building Virginia '99
Richmond
November 4–5
The annual regional conference and expo for design professionals sponsored by the Virginia AIA. Richmond Centre. 804/644-3041.

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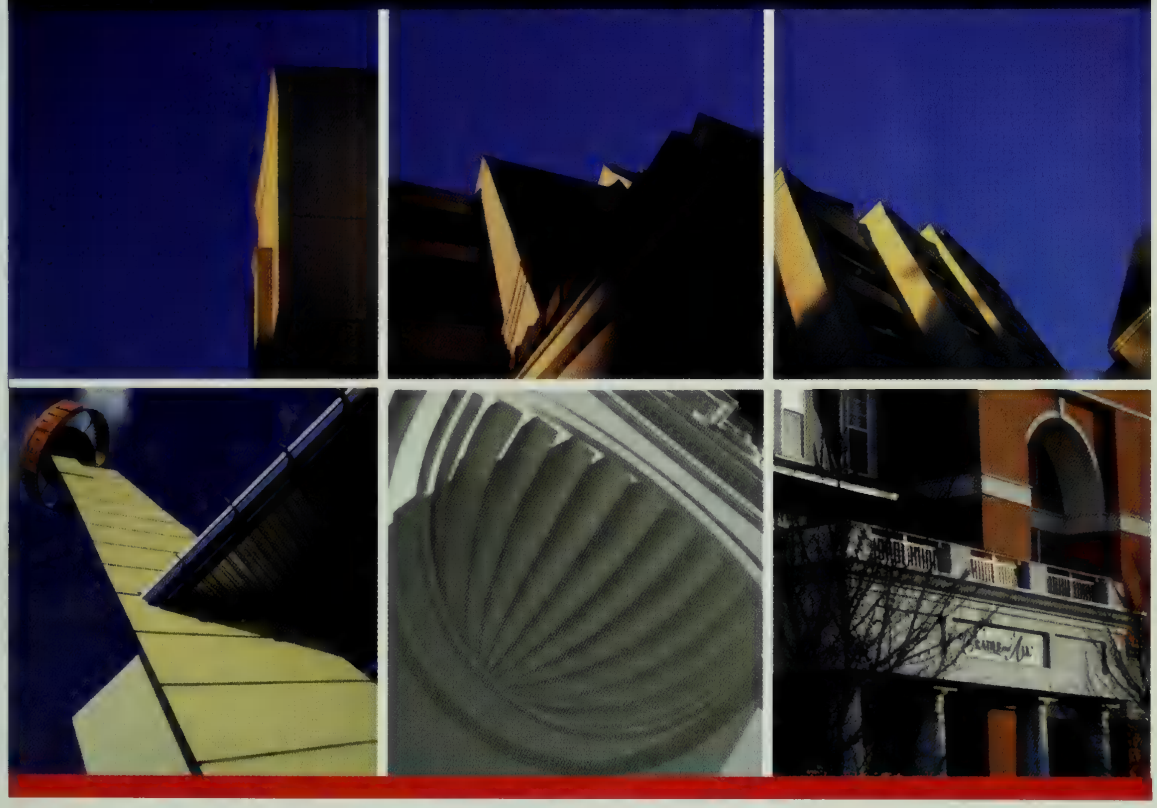

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CIRCLE 45 ON INQUIRY CARD

Seniors Housing Show
Philadelphia
November 5–7
The first tradeshow to focus exclusively on the housing for active, independent-living seniors. Held concurrently with the remodelers' and custom builders' shows. Pennsylvania Convention Center. 800/368-5242 x197.

ITS World Congress
Toronto
November 8–12
The annual congress and expo for professionals in the field of intelligent transport systems. Metro Toronto Convention Centre. 416/588-5051.

Alvar Aalto's Private Residences
Albuquerque
November 1–30
An exhibition of the legendary Modernist's residential work, photographed by Jari Jetsonen. University of New Mexico. 505/260-0433.

Constant's New Babylon
New York City
November 2–December 30
The first major U.S. exhibition of Dutch artist/architect Constant Nieuwenhuys' magnum opus, an urban utopia the artist imagined through models, paintings, films, and sound projects. The Drawing Center. 212/219-2166.

Competitions

The Dryvit International Design Competition
Submission deadline: December 1
Dryvit Systems Inc., a manufacturer of exterior insulation and finish systems, is seeking entries in the annual Dryvit International Design Competition. A $5,000 first prize will be awarded to the architect whose work best reflects the design freedom Dryvit provides in the building process. The winning design will also be featured in a two-page spread that will appear in the February 2001 issue of ARCHITECTURAL RECORD. 1/800/4DRYVIT.

Milano 2001
Entry form deadline: October 30
Submisson deadline: December 30
The Milan City Council is sponsoring an international competition for the preliminary design of a structure for one of the city's public spaces, a "luminous sign" to mark the beginning of the Third Millennium. The competition tender is published online at www.arcadata.it, www.aem.it, www.partners.it, and www.milanoprogetti.org. Entry fee is $120.

Our Lady of Guadalupe Church Competition
Submission deadline: December 1999
In celebration of the Jubilee year, the Roman Catholic Diocese of Fort Wayne-South Bend, Indiana, is sponsoring a competition for the design of a new church in Milford for a rural Hispanic parish. Call 219/483-3661 to receive a program package, which includes a video of Milford community life.

CRSI Design Awards
Submission deadline: October 22
Sponsored by the Concrete Reinforcing Steel Institute, this program recognizes predominately site-cast, conventionally reinforced concrete structures completed since January 1997 in Canada, Mexico, and the U.S. or its territories. Contact Dawn Svab at 847/517-1200 x18, or E-mail her at dawn@crsi.org. ■

Please submit information for the calendar at least six weeks prior to the magazine's publication date (October 15 for the December issue).

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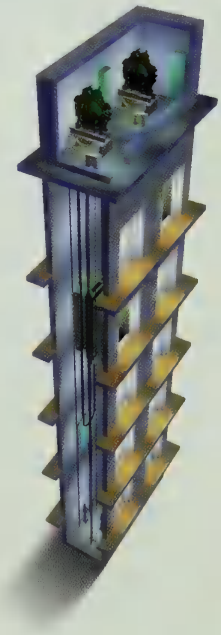

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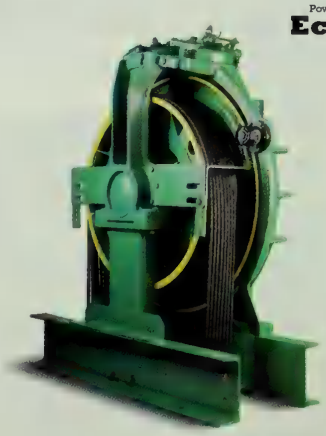

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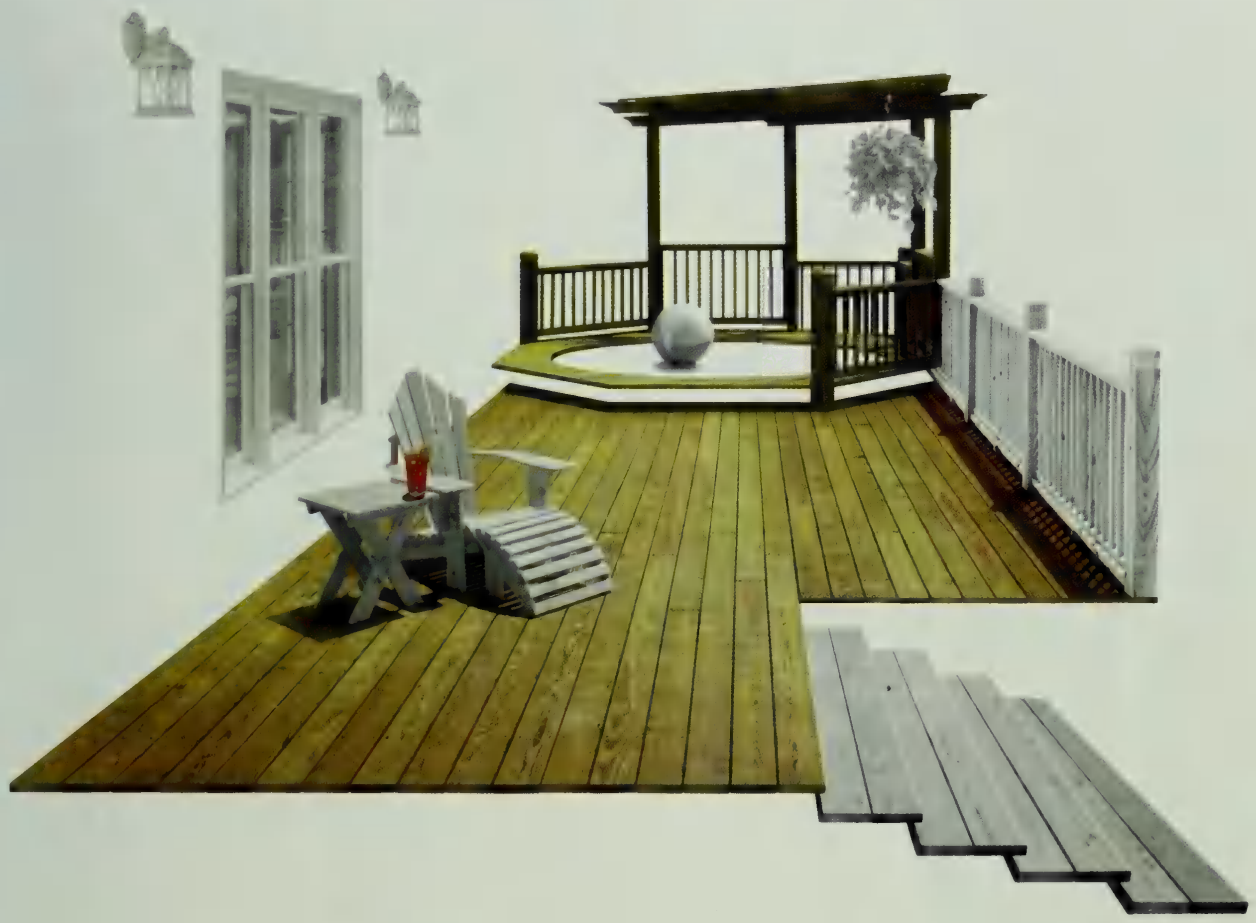

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CIRCLE 51 ON INQUIRY CARD

Taking the Measure of

The Third Annual Business Week/Architectural Record Awards

Past winners say publication of their projects in the Business Week/Architectural Record "Good Design is Good Business" Awards unleashed a torrent of inquiries, testimony to the increasing role architecture is playing in business success. Powerful trends—more volatile markets, the need for greater collaboration, the need to retain valued staff—drive business leaders to seek answers from architects. Two hundred fourteen teams entered this year, providing the detailed information about business goals and results—as well as architectural aspirations—that makes this awards program uniquely rigorous. Entries were evaluated by a jury of business leaders and architects chosen by the publications (both units of The McGraw-Hill Companies) and the AIA, the sponsor. Jurors visited all finalist projects; awards often hinged on their site reports. In excerpts from jury transcripts and interviews (following pages), panelists reflect on issues that both troubled and exhilarated them. Check out Business Week's *November 1st issue, and go to www.archrecord.com for submission information for next year's awards.* —James S. Russell

Design and the Bottom Line

I was surprised by the **enormous variety** in the submissions. Every single type of project imaginable was submitted—from an enormous project in Singapore, costing in the billions of dollars, to a preschool. (**West**) We didn't award projects that simply consolidated 10 offices into one. We found winners that **supported businesses in very profound and subtle and innovative ways**. But I learned that we too rarely ask architecture to go beyond the functional support of business. (**Snow**) ■ We're seeing more and more companies that are really taking the open plan and turning it into an **electronic sweatshop**, with enormous floorplates where people are what I call dense-packed. (**Rittelman**) We didn't give awards to any of those. (**West**) The discussion was not about what was good and bad, it was more why. What are the qualities that make it work? (**Swett**) ■ I suspect a business and architecture award upsets things some architects hold dear. (**Thurm**) The architect can't be permitted to work in an ivory tower. The building must be a **machine for doing better work** with less effort. (**Tieger**) ■

1999 BUSINESS WEEK/ARCHITECTURAL RECORD AWARDS JURY

Duke Oakley, *assistant vice chancellor, University of California, Los Angeles* • **Julie V. Snow, AIA**, *principal, Julie Snow Architects, Minneapolis*
William Pedersen, FAIA, *principal, Kohn Pedersen Fox Associates, New York City* • **Richard N. Swett, AIA**, *U.S. ambassador to Denmark, Copenhagen*
Rafael Pelli, AIA, *partner, Cesar Pelli & Associates, New Haven* • **David Tieger**, *founding CEO, Gemini Consulting, Bernardsville, N.J.*
P. Richard Rittelman, FAIA, *principal, Burt Hill Kosar Rittelman, Butler, Pa.* • **David Thurm**, *vice president, production,* The New York Times, *New York City*

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CIRCLE 52 ON INQUIRY CARD

"A project that brilliantly solved a problem would win over something that was exquisite but didn't solve the problems." —Rafael Pelli

What marked many of the submissions and the winners was **the chances they took in their neighborhoods.** Many became crown jewels. (Thurm) All of the winners dealt in some way with **difficult, constrained, or compromised sites.** Some of them wanted to make a statement and drive development forward around themselves. Sometimes they simply believed in their community. This was successful in terms of the business plan, but it also made the design more important. (Oakley) This is a way architects can lead in the community. Not enough leadership occurs. (Swett) ■ We were all curious about the condition that explains **the higher quality of building in some of the European countries.** We commented frequently that very few buildings in the U.S. are designed on the basis of life-cycle analysis. There's still a heavy first-cost mentality. (Rittelman) The Swiss very clearly articulate that a high quality building brings in more revenue and pays back. In each case, not only has the building increased in value, but the surrounding areas have increased dramatically in value. (Pedersen) ■ We do need to change the mindset in America that **architecture is perceived as a consumer of the bottom line, not something that adds to it.** It brings value to the employees; it helps retain employees. (Snow) The Howard Roarkian idea of the architect [as iconoclast form-giver] is slowly giving way to the architect as facilitator and mediator and, ultimately, the definer of the combined vision of client and architect. (Swett) ■ Businesses do need to **beware of mediocrity in any form.** CEOs should say, let's use architecture to make a statement to our people and our clients about who we are, what we stand for, and what differentiates us. (Tieger) ■ Clients ask us about the specific **relationship between the physical environment and human productivity.** It is hard to establish, because humans defy precise measurement. The winners seemed to understand inferentially that probably this design is good business even if they can't prove it by basic, measured research. (Rittelman) What characterized the winners was a **strong client lead.** Frequently, you have a hydra-headed client in a large building process, and when those don't come together, we see less thought-through buildings. (Rittelman) Working with the head of physical facilities in most firms is not going to get the job down right. (Tieger) I don't know if you would get the level of collaboration we found in the winners if it were just one client voice. If there's collaboration without anyone with a sense of vision, however, it gets messy. (Thurm) ■ It's a risk, but architects must question whether the proposed direction really works. Then, they can **make a good client better.** (West) ■

"It was fairly easy to get down to 20 or 30 semifinalists. So many people are afraid to use design to be different." —Alfred P. West

ALCOA CORPORATE CENTER

When the going gets tough, Wall Street analysts tend to frown on companies that build costly new headquarters. But CEO Paul O'Neill, who is credited with streamlining Alcoa over several years even as aluminum prices have plunged, felt that the company's dramatically revamped structure could only be a long-term success with a new building.

"We started with business ideas, not architectural ideas," O'Neill says, but the company sought architectural means to realize those ideas from Alcoa's architect, the Design Alliance. The business goal of "creating a people focus" was answered by limiting to 45 feet the distance from any open-plan workstation to the riverside facade and its spectacular views of downtown Pittsburgh. Out went private offices for high-level managers—they reinforce hierarchy the company wanted to eliminate. In went highly flexible, low-partitioned workstations—even for O'Neill. Though workers gave up privacy, they gained amenity: a workplace flooded with natural light—aided by a ceiling height of more than 11 feet. And they gain flexibility: workstations are easily reconfigured because supply air and cables for electricity, telephones, and data are all accessible in a raised access floor.

"WE STARTED WITH BUSINESS IDEAS, NOT ARCHITECTURAL IDEAS." *—Paul O'Neill*

The company says these amenities and the overall design quality have aided recruitment and contributed to the consensus among analysts that the company is among America's most agile and well managed. *J.S.R.*

Key Players: *Alcoa—Paul O'Neill (in photo right), several hundred Alcoa employees working in teams; The Design Alliance Architects—Martin E. Powell, AIA, David L. Ross, Mary Ann Mozelewski; Rusli Associates (design consultant)*

Sunshades temper light entering the Allegheny River side (opposite). The entrance (below) is scaled to the neighborhood.

"The CEO forged the connection between architecture and his vision for the corporation. The new building is a tangible tool. But the building is not what's important. It's what it represents that's important."

—*David Tieger*

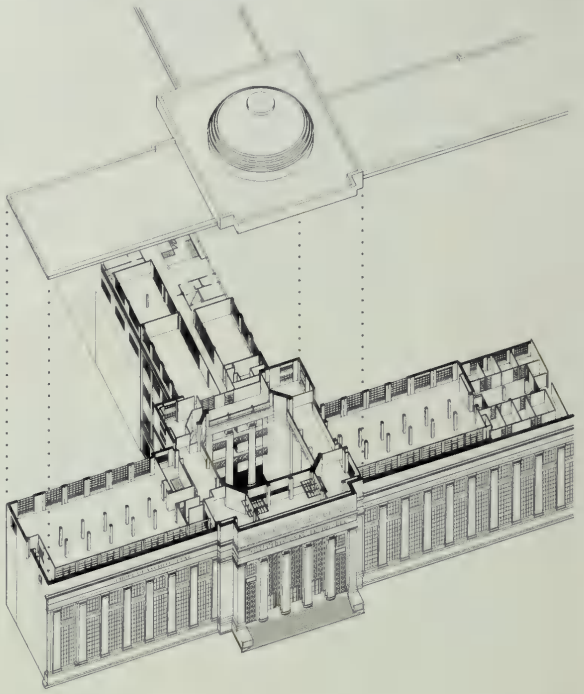
"There was a very long period of design and a very deliberate construction process. They did mock-ups of their designs, so they could try out new relationships."

—*Julie Snow*

TYPICAL FLOOR PLAN

1. *Atrium*
2. *Bridge/Gathering area*
3. *Open office*
4. *Kitchen*
5. *Video conference*
6. *Meeting*
7. *Learning center*

The building's key unifying space is the light-bathed atrium (below opposite), in which people readily encounter each other. Left: cafeteria.



MIT SCHOOL OF ARCHITECTURE AND PLANNING

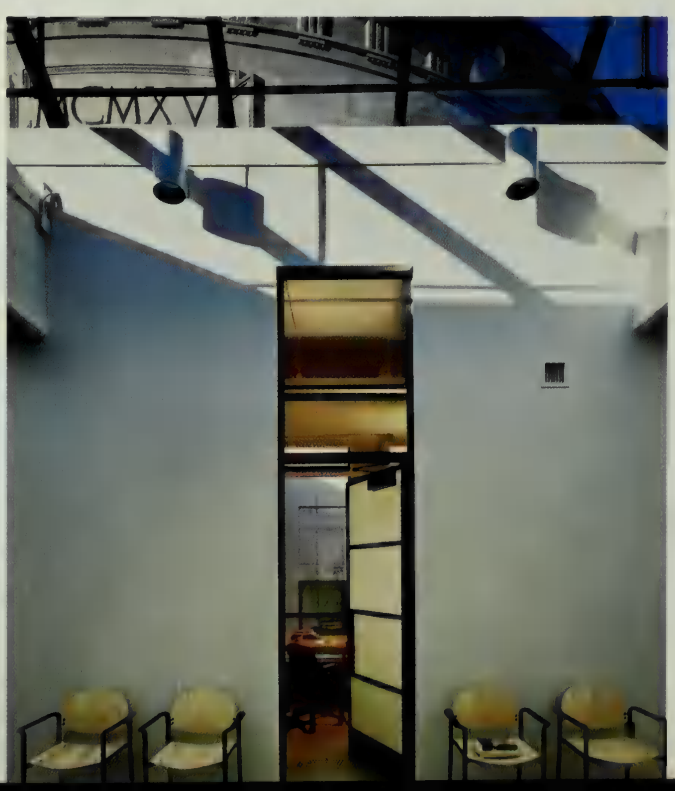
Architecture schools are often the poor stepchildren in the academic pecking order. MIT architecture school dean William Mitchell decided to change the equation, moving the school, spread out among 12 structures on the campus' periphery, to a central location where it could take a more prominent role in university life and where it could make common cause with related fields, such as mechanical engineering.

The selected site was prominent all right—the upper levels of the institute's vast, iconic main building—and problematic. But architect Leers Weinzapfel, Boston, rose to the occasion, wrapping the key social spaces and jury rooms around the building's dome (opposite top). Partner Jane Weinzapfel, FAIA, created clear circulation within the sprawling square footage (opposite bottom). Overhead-acting garage-style doors (as in the student-review photo above) introduce flexibility. The new studio spaces are fully wired for computers and sophisticated telecommunications equipment.

"WONDERFULLY RESTRAINED. CAN YOU IMAGINE A MORE DIFFICULT CLIENT?" *—Julie Snow*

Involving the heads of the four departments of the school, as well as university physical plant and planning representatives, the design came about through an unusually collaborative process. It was also built in stages, when school was not in session. *J.S.R.*

Key Players: *MIT—William Mitchell, Diane McLaughlin, Susan Personette, AIA, Stanford Anderson, Bish Sanyal; Leers Weinzapfel Architects—Jane Weinzapfel, FAIA, Andrea P. Leers, FAIA, Mark Armstrong, AIA, Alex Adkins, AIA, Karen Swett, AIA*



PHOTOGRAPHY: © CHUCK CHOI; JUSTIN KNIGHT (STUDENTS)

"MIT said we'll place ourselves in a more constrained building, because it's important to be closer to the center of campus and related disciplines. It's very hard to put a number to that benefit, but it's part of the vision that makes for excellent projects."

—David Thurm

"Much of what was important about this were things you couldn't see. Only after walking around with Jane Weinzapfel and seeing all the junk she had to clear out, did I understand how careful it really was."

—Rafael Pelli

ABB POWER GENERATION LTD.

American architects are often frustrated because the kinds of innovative technologies that are becoming common in northern Europe rarely "pencil out" in the States. This Swiss industrial company was able to use its building to convey its quality-driven engineering culture, while actually reducing occupancy costs. A highly innovative financing scheme [page 97], reveals what worked for ABB and why Europe is such a fertile ground for building innovation.

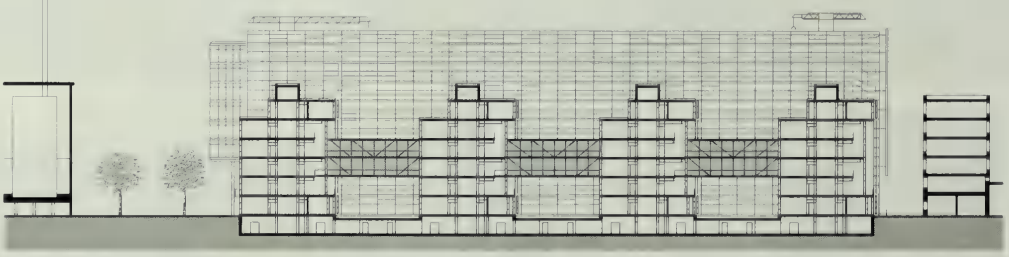
With the power-generation business becoming increasingly competitive, the company decided to bring together departments located in 29 separate facilities so that people could more readily collaborate and the company could change the size and composition of teams to follow its markets.

Architect Theo Hotz, of Zurich, built a single new structure for 2,100 employees on a large industrial site ABB owned in Baden. Six-story wings containing most of the office space extend from a narrow nine-story section (below), where shared spaces are located. The restaurant, cafeteria, conference spaces, training areas, and foyer are located in the lower levels of the main wing, with duplex communication and meeting rooms set at the top. A glazed, full-height atrium unites these areas, all of which are accessed by appealing spiral stairs (opposite top).

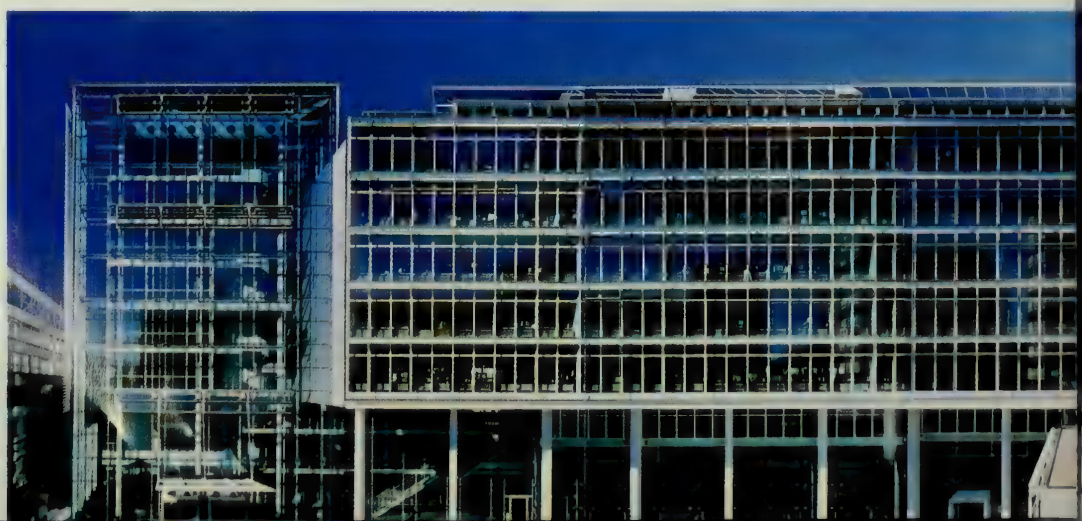
The energy-reducing design says to clients that ABB won't waste their energy either. The narrow, fingerlike wings offer daylight and natural ventilation to all. Glazed passages connect the wings at the third and fourth floors, facilitating access among teams. The company compares the flexible, collaborative culture the building has fostered to that of a friendly small town.

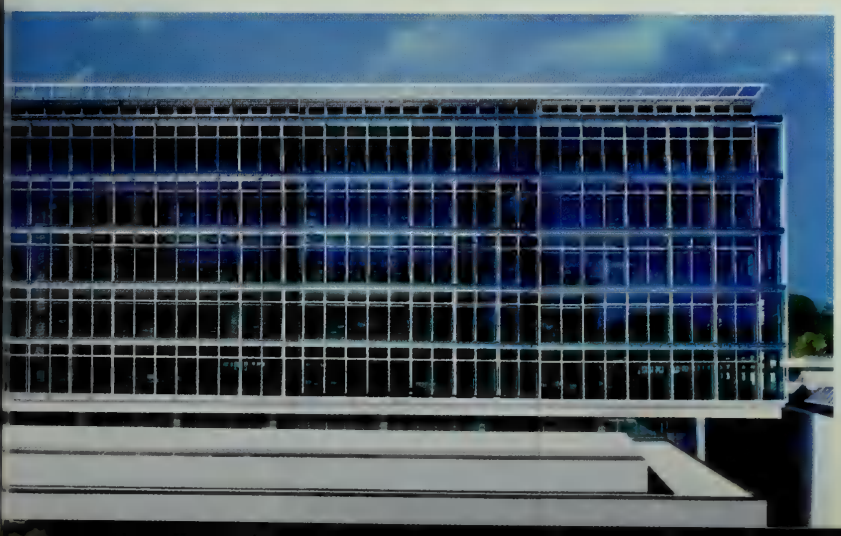
A shading system, with external automated blinds, protects the operable curtain wall, minimizing air conditioning, even with the high percentage of perimeter wall. Lobby and atrium spaces in the main wing are only minimally heated and cooled, thermally buffering occupied spaces. The building mass absorbs excess heat generated during the day, exhausting it or reradiating it at night, as needed. *J.S.R.*

"THEY SHOW THEY CARE ABOUT THEIR PRODUCT, ENERGY, BY NOT WASTING IT." *—Alfred P. West*



SECTION A-A



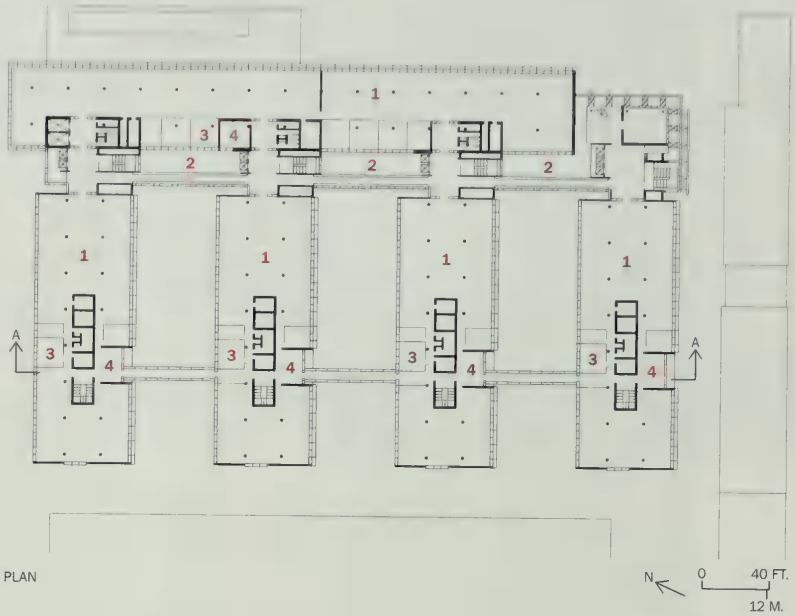


Key Players: *ABB Power Generation Ltd., ABB Immobilien (real estate division)—Armin Meyer, PhD (opposite top), Hermann Suter, Renzo Fagetti; Theo Hotz AG Architekten + Planer—Theo Hotz, Stefan Adler, Martina Köberle, Heinz Moser, Roland Steinemann*

"The cynical view is that this, like everything in life, is done to avoid taxes, especially where the tax rate is 50 to 60 percent. And yet the concern for design that is aesthetic and functional really exceeds what we do in the U.S. We could do more to link the design professions to issues that affect quality of life." —*Richard Swett*

"Certainly the way in which the owners got a payback for the beautifully crafted technology helped this project win."
—*Julie Snow*

1. *Open office*
2. *Enclosed office*
3. *Refreshment*
4. *Atrium*



PLAN

Two-level glazed passageways connect the upper levels of the fingerlike wings (opposite). Because of the wings' narrowness, workstations are close to windows. Retractable shades on armatures projected out from the curtain wall protect the facade from excess solar-heat gain. Right: cafeteria.

CREATIVE FINANCING MADE ABB'S QUALITY ARCHITECTURE PAY.

Regulations and tax policy in Europe nudge companies to build for the long term while reducing energy use and other environmental impacts, the jury noted, but American policies often promote the opposite. ABB was uniquely creative in the way it used these policies to realize its quality and cost objectives.

Leveraging surplus property: Rather than abandon or sell off property no longer needed (much of it obsolete industrial sites) as facilities were consolidated, ABB Immobilien, the company's real estate arm, worked with local agencies to replan the sites and sought rezoning for higher value uses. At the Baden site of the Power Generation headquarters, the company redeveloped sites for offices, housing, and shopping centers and converted landmark-quality buildings to mixed-use lofts, realizing up to 10 times previous book value on the redeveloped land.

Design-build: The architect was selected in an invited competition in late 1992 but then joined a design-build team that included general contractor Oerlikon-Bürhrle and ABB Immobilien as developer. Move-in began just 22 months after the start of construction.

Sale/leaseback: By Swiss law, pension funds are required to place a certain percentage of their investments in capital projects. ABB sold the land and building before construction (based on a price guaranteed by the design-build team) to a consortium of pension funds. ABB, which wants to concentrate on its core business, according to spokesman Markus Belfer, benefitted by not having to carry the property on its books, instead realizing a capital gain on the sale.

The company could lease the facility from the pension funds at favorable rates because the package exposed the new owner to minimal risk. The company realizes the flexibility of leasing (it can dispose of space it is not using) while being able to afford a quality of construction commensurate with ownership.

In this way the company could afford to consolidate scattered business units and bring them into a better quality facility while lowering occupancy and operating costs.

The long write-off periods mandated by America's tax code, says juror David Tieger, make long-term capital investment a losing proposition: "In Europe, these great buildings get deducted as an expense." European regulations also mandate access to daylight. The conservation techniques pay back more quickly due to higher taxes on energy. *J.S.R.*

NEW JERSEY HOUSING AND MORTGAGE FINANCE AGENCY

An innovative partnership among the client, Tri-Berman Development Company, and the joint venture architects adapted a landmark building in a struggling neighborhood as this agency's new headquarters.

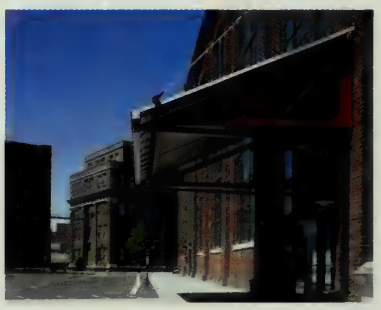
The agency had restructured itself to coordinate once separate efforts to increase affordable housing and foster urban redevelopment partnerships. It wanted its new home to reflect its new mission.

Rejecting the standard government-office solution of dropped ceilings and ranks of cubicles, the client and its architect designed conference rooms as defining architectural gathering places for each department (top and bottom right). Broad "avenues" penetrate the closed areas to tie together the open-office areas. Much of the space opens upward to the lofty metal trusswork of the roof. Restored monitors bathe the space with light.

The agency has so successfully met its new mandates that it has been given additional responsibilities. The state's new commitment to the neighborhood primed it for further development: senior housing, a new shopping center, an arts center and cafe, among others. *J.S.R.*

"IF A STATE AGENCY CAN DO THIS, ANYONE CAN DO IT." *—David Tieger*

Key Players: *NJHMFA—Ira Oskowsky (far left in photo top), Ann Merlino (fourth from left), Michael Floyd (standing); Ford Farewell Mills and Gatsch/Johnson Jones—James A. Gatsch,* AIA, *Catherine Counts,* AIA, *Michael Farewell,* FAIA, *Harry LaBold*



"This was such a great mold breaker."
—Duke Oakley

"This is a very effective and inexpensive way of giving people in a large organization a genuine sense of place."
—Richard Swett

PLAN

1. *Reception*
2. *Sales area*
3. *Changing*
4. *Office/Storage*

HELMUT LANG BOUTIQUE

Is it a gallery or a retail store? At Helmut Lang, you have to stroll inside, past the zipper-sign column by artist Jenny Holzer, to be sure. In New York City's Soho district, home to galleries and fashion boutiques, a store that blurs the line between the two is not necessarily out of place. Nor is it surprising that the store looks the way it does, considering it was designed by Gluckman Mayner, architect of numerous gallery spaces and museums.

The store's apparent inversion of retail norms (in which merchadise plays second fiddle to the surroundings) came about because of this high-end fashion house's desire to create a unique image in a crowded and image-saturated market. The architect's minimalist aesthetic emulates the art-viewing experience: the serene reception space enables the patron to focus fully on the merchandise, which is presented within large, slablike cabinets (below).

"THEY TURNED CONVENTIONS OF RETAIL ON THEIR HEAD." *—William Pedersen*

The store has proved a sales success and established the company's presence in the New York market, spurring imitators, even winning a place in guidebooks. *J.S.R.*

Key Players: *Helmut Lang—Helmut Lang; Gluckman Mayner Architects—Richard Gluckman,* FAIA, *Melissa Cicetti, Perry Whidden, Eric Chang, Bobby Han*

"He concealed the product, then elevated the retail environment to this ethereal level, where the product benefits from the scrutiny that you might give a work of art. Fortunately the clothes can stand up to it."
—Julie Snow

"They built a piece of installation art as a way of saying 'buy our clothes and you become art.' "
—David Tieger

Key Players: *Republic Inc.—Rich Gillman, Ron Spielman (left to right in photo), Andrcej Palccewski, Deborah Brougham, Amy Cusentino; Booth Hansen Associates—Laurence O. Booth, FAIA; William Ketcham, AIA; David Mann, AIA; Kerl LaJeune; Hendler Design (interiors); Wooton Construction—Bill Smith*

REPUBLIC WINDOWS AND DOORS

The simple provision of clerestories sets this window-production space apart from most American industrial construction. But it is only one of many innovations that won the combined manufacturing and headquarters an award. The family-owned Republic Inc. wanted a building representing "a paradigm shift" and received, from Chicago's Booth Hansen Associates, a structure that is not only elegant, but is also the fruit of an intense collaboration among management and production staff.

"IT'S VERY MUCH ABOUT ENHANCING A NEIGHBORHOOD." *—William Pedersen*

Though it could have moved outside the city or to another state, the company chose a site on Goose Island, a redeveloping industrial zone near the center of Chicago. By staying in Chicago, Republic was able to retain valued staff, as most lived within an eight-mile radius.

The new facility houses staff-oriented amenities such as fitness centers and a subsidized cafeteria. It also offers continuing-education and vocational classes in a training center. Product-display and training areas ease communication between production-line staff and managers.

The 40-foot-square column grid in the production area balances cost with production-line-layout flexibility. One reengineered line increased productivity by 45 percent in a 40 percent smaller footprint.

In plan, the building is a 650-foot-by-450-foot rectangle, a single-floor production space fronted by three stories of offices. The architect created an elegant statement from this typical layout by sloping up the roof over the office space, culminating in a trellised sunshade. Horizontal, ribbed metal cladding runs behind external structural columns, which highlights the building's structure.

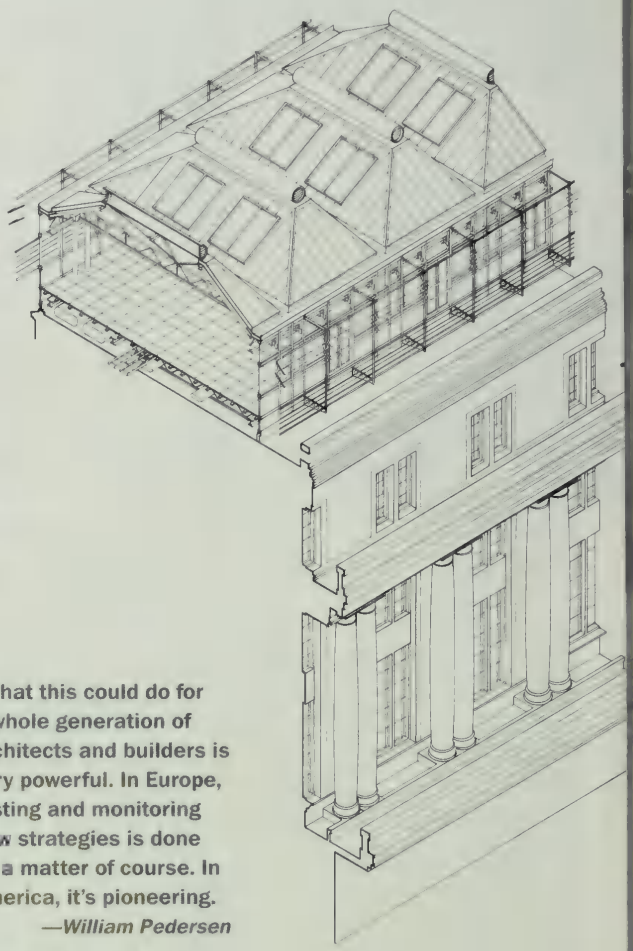
Aside from increasing productivity overall, the central location and distinctive architecture have raised the profile of the company with customers and helped retain and attract valued staff. *J.S.R.*

"They clearly decided not just to stay in the community where most workers lived, but to engage them and make a real addition to the community."

—David Thurm

"The elegance of the architecture gives a welcoming front. It makes it a real neighbor."

—Rafael Pelli



ROBERT L. PREGER INTELLIGENT WORKPLACE

Volker Hartkopf "designed" a consortium of 42 building-industry partners (The Advanced Building Systems Integration Consortium), who not only made this project at Carnegie Mellon University in Pittsburgh possible, but who also benefit from this facility for evaluating new construction technologies [June 1998, page 148]. Among the center's innovations are computerized sensors that drive motorized sunshades (top), balancing daylighting with heat-gain reduction.

Inside, a floor-level displacement-air system dramatically reduces energy use. A raised access floor accommodates innovative wiring solutions. Even the building's erection scheme reduced the facility's impact on the landmark Margaret Morrison Hall.

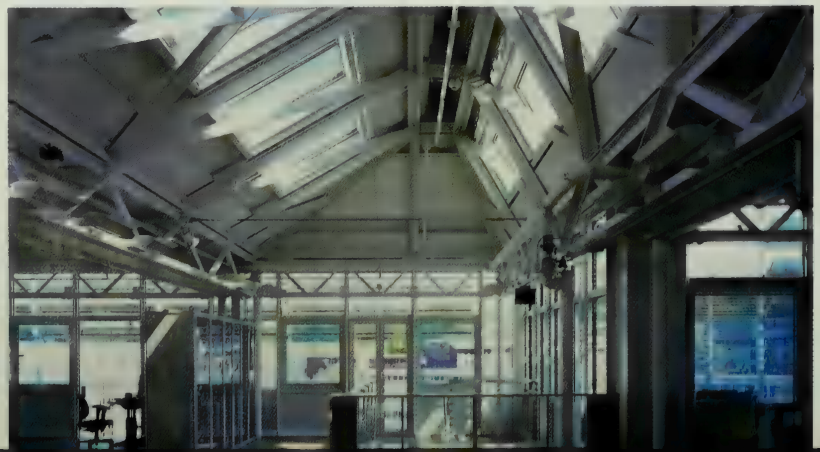
The project has attracted international attention, enhanced interest in the perpetually underfunded area of construction research, and boosted applicants. *J.S.R.*

"IT'S A MARKETING TOOL FOR STUDENTS AND FACULTY." *—David Tieger*

"What this could do for a whole generation of architects and builders is very powerful. In Europe, testing and monitoring new strategies is done as a matter of course. In America, it's pioneering.
—William Pedersen

"The very goal of the project was to align architecture in support of business. So, to me, this was an obvious winner."
—Julie Snow

Key Players: *The Center for Building Performance and Diagnostics—Volker Hartkopf, PhD, Stephen Lee; Bohlin Cywinski Jackson—Jon C. Jackson, AIA, Peter Q. Bohlin, FAIA, Gregory R. Mottola, AIA; Pierre Zoelly Architect—Pierre Zoelly, AIA (conceptual design); Josef Gartner & Co. (exterior wall system)*



LA MARINA PRESCHOOL

Because of a state-mandated ratio of outdoor play space to indoor program areas, land costs alone should have precluded this preschool's construction in Manhattan Beach, Calif.

"THEY MET STATE MANDATES BY HARD WORK AND CLEVERNESS." *—Rafael Pelli*

In an act of creative planning, the architect, Studio 9one2, of Hermosa Beach, negotiated a design with the California Department of Health Services that permitted the preschool to build on an undersized lot.

The architect set the squarish concrete-block-faced building low in its site. Children scramble up grassy terraces and a ramp to the rooftop, where most of the play area wraps a pyramidal skylight. Classrooms surround a central reading space (right) under the skylight. A separate set of external ramps lead through a tiny amphitheater (left) to the entrance. Sensitive use of cutouts in the masonry walls, as well as a mix of materials (below) opens the structure to its neighborhood.

The design passed rigorous scrutiny by local planners and neighbors as well as the state. The limited above-ground exterior wall reduces cooling loads, lowering operating costs. The state licensed the facility for 90 children, 10 more than first requested, offering comfort to lenders, whose participation was essential to the feasability of this for-profit facility. Full enrollment was reached in six months, and there is a long waiting list. *J.S.R.*

Key Players: *La Marina Preschool—Kimberly Ritchie, Isabel Currie, Janis Weaver (left to right in photo above); Studio 9one2—Patrick J. Killen, AIA, Howard G. Crabtree, Daryl Olesinski, Robert Treman, Marie Linden*

"They could not have used that piece of property if they had not been thinking way outside the box."
—Duke Oakley

"Having seven children of my own, I can see that the child was regarded as important a client as the people operating the building."
—Richard Swett

"It supports the children's experiences without being childish or pandering. It's very carefully assembled."
—Julie Snow

ASTRA FRANCE HEADQUARTERS

Removing barriers to communication has become a chestnut of management theory, but companies still find it difficult to accomplish. Too often they overlook *architectural* opportunities to foster interaction or wonder if it only works for those who commit to a radical architectural solution. This corporate headquarters for a pharmaceutical company in Rueil Malmaison, France, was able to evolve its culture without architectural chest thumping.

Architect Jean Paul Viguier SA d'Architecture, of Paris, arranged a narrow rectangular volume and a stepped volume around an atrium daylighted at the top and end (axonometric and opposite, top). The resulting building form, while compact, places workstations close to windows. Bridges and convenience stairs (bottom right) cross this space, greatly easing communication among departments and encouraging casual meetings.

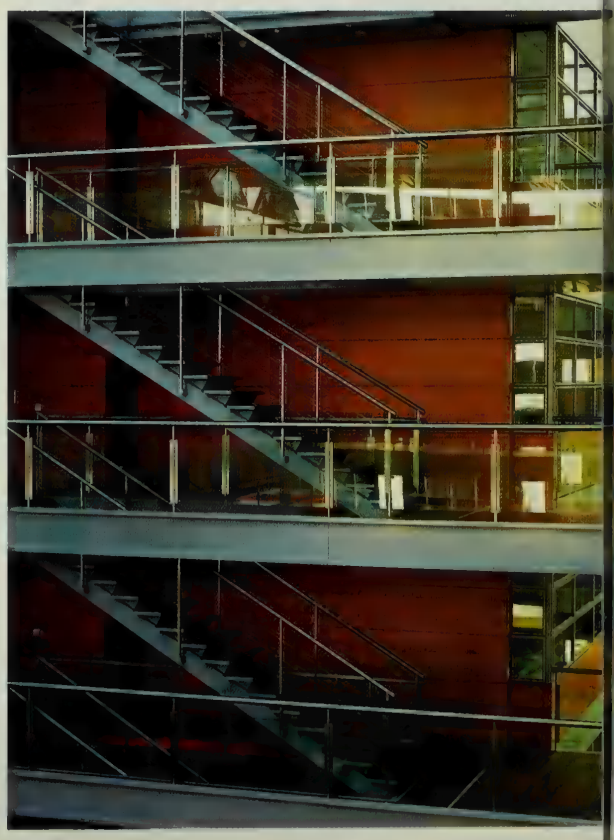
The workings of various departments also become more transparent because the arrangement of appealing communal spaces urges people to move upward and downward through the building. Training areas and an auditorium on the ground floor open to the atrium gathering space, which has been dubbed the Agora. Employees go to the top floor to find the cafeteria and outdoor dining (opposite bottom).

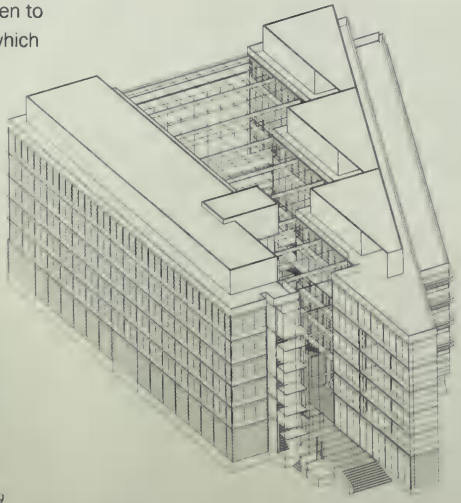
The company has documented the correlation between improved internal communication and the ease with which people move throughout the building and the staff's approval of the environment. The Agora has become an important meeting place, used for formal presentations and spontaneously arranged conclaves. Clients and vendors request meetings at the headquarters because they find it so appealing, consequently reducing the number of off-site trips employees must make.

The headquarters has become a local landmark, with community groups requesting use of the space. Even ad agencies shoot commercials there for the lightness and warmth the building presents. *J.S.R.*

"EUROPEANS SEE QUALITY ENVIRONMENTS AS ADDING TO PRODUCTIVITY." *—Richard Swett*

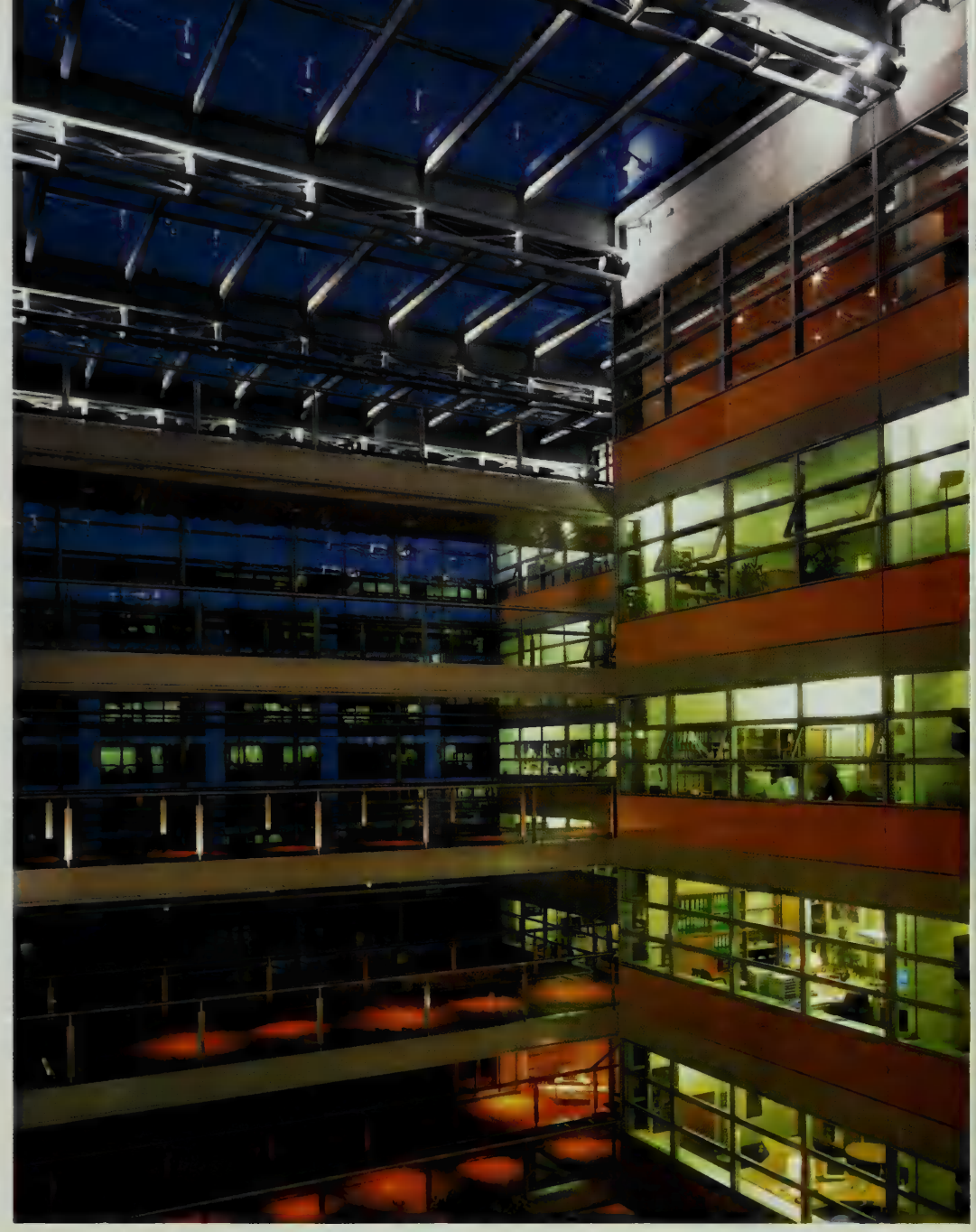
Key Players: *Astra France Holding—Jean-Pierre Cassan, Stig Tallqvist, Philippe Thoumyre; Jean Paul Viguier SA d'Architecture—Jean Paul Viguier,* ASSOC. AIA, *Vincent Cortes; Beaulieu Ingenierie (structural engineering); Trouvin (mechanical engineer); Jacobs Serete (contractor)*





"The company seems to have had a well-established, efficient culture, which the building sustained rather than transformed. It was successful because it captured the business purpose and furthered it."
—*David Thurm*

"The architect paid meticulous attention to detail. It's a very comfortable environment—where nature plays an important role—one that seems more human than almost any of the corporate headquarters we saw."
—*William Pedersen*



SOURCES

ABB Power Generation

Artificial stone staircases: *K. Studer*
Steel staircases: *Bernard Sottas SA*
Steelwork: *Bernard Sottas SA, Baltensperger*
Office facade: *Schmidlin*
Glass facade: *H. Fischer GmbH, Hirsch*
Internal facade: *Aepli & Co.*
Sun shading: *Schenker*
Flat roof coverings: *Isomat-Bau, Schoop+Co.*
Mastic pointing: *Isotech*
Lighting fittings: *Fluora, Zumtobel*
Illuminated signs: *Speckert+Klein*
Smoke detectors: *Mayer*
Audio/video systems: *Zihlmann*
Building management system: *ABB-CMC*
Heating: *Lehmann, Pumilia*
Ventilation and air-conditioning: *Luwa, J. Muller, Lippuner*
Sanitary installation: *F. Heusser, Rothmayr*
Sprinklers: *Walter*
Elevators: *Schindler*
Facade-cleaning equipment: *Küpfer Brothers*
Plasterwork: *W. Späni*
Internal glazing: *H. Wetter , Weber, Ziltener, Lauchli, Kempf*
Doors: *Ego Kiefer, RWD Schlatter, P. Bucher*
Handrailings: *H. Wetter*
Partitions: *Reppisch-Work, Interfinish, Huppe Form, Ita Sons*
Subflooring: *Cosimo B. Graf*
Jointless flooring: *Amarit, Steinit*
Textile flooring: *Kistler, Möbel Pfister*
Artificial stone floors: *K. Studer*
Double floors: *Sicap, Debea*
Baseboards: *Spiller*
Floor and wall tiling: *G. Fehlmann, Achilles Karrer*
Ceilings: *EMG GmbH, LBS, FK, Mensch, Isolag*
Internal painting: *Wernli, Nax Schweizer, Zünd*
Signs: *Speckert+Klein*
Stone plinth: *Kohler*
Natural-stone paving: *Stebler, K. Studer, O.M.G. SPA*
External works: *W. Bertschinger*
Kitchen fittings: *Franke, Meiko (Suisse), Buob Roschach, Baumgartner, H. Foster*

Alcoa Corporate Center

Masonry: *Briar Hill Quarry (sandstone)*
Metal/glass curtainwall: *Benson Custom*
Wood: *Bacon Veneers Co.*
Built-up roofing: *Siplast*
Glass: *PPG*
Skylights: *Supersky*
Entrances: *Benson (storefronts, exterior), EPI (interior)*
Metal doors: *Steel Craft*
Wood doors: *Weyerhaeuser*
Locksets: *Sargeant*
Cabinet hardware: *Hafele America*
Acoustical ceilings: *Armstrong*
Suspension grid: *Armstrong*
Demountable partitions: *Herman Miller*
Paints and stains: *Pittsburgh Paints, Polymyx, Zolaton*
Wallcoverings: *Fine art on commission, Knoll Textiles*
Paneling: *Bacon Veneer Co.*
Plastic laminate: *Pionite, Formica, Nevamar*
Special surfacing: *Fountainhead, Gibraltar, Avonite*
Resilient flooring: *Endura*
Carpet and tile: *Collins & Aikman (tile), Broadloom, Prince Street and Karastan*
Raised flooring: *CTEC*
Office furniture: *Herman Miller*
Reception furniture: *Herman Miller*
Chairs: *Bruceton, Dauphin, Davis, Design Link, Gregson, Haworth, HBF, Herman Miller, Knoll, Leland, Steelcase, Thonet*
Tables: *Falcon (restaurant), AGI, Davis, Design Link, Geiger, Herman Miller, Hale, Knoll, Versteel*
Upholstery: *Spinneybeck (leather), Sina Pearson, Design Tex, Maharam, Herman Miller, Unik Vaev, Knoll (workstation fabric), Architex, Deepa, ArcCom*
Other furniture: *Mobilia (audiovisual unit)*
Interior ambient lighting: *Columbia*
Downlights: *Lithonia, Prescolite*
Task lighting: *Herman Miller*
Exterior: *Hydra, Kim*
Controls: *Lutron, General Electric*
Elevators/Escalators: *Schindler*
Faucets: *Kroin*
Toilets/Sinks: *American Standard*
Drinking Fountains: *Oasis*
Shower Units: *Aqua Glass*

ASTRA France

Structural system: *SAEP Equipment*
Metal/glass curtain wall: *Alusuisse (metal), St-Gobain (glass)*
Concrete: *SAEP Equipment*
Built-up roofing: *SPAPA (asphalt)*
Aluminum: *Harmon CFEM*
Glazing: *St-Gobain*
Skylights: *Harmon CFEM*
Insulated-panel or plastic glazing: *Harmon CFEM*
Entrances: *Stanley*
Wood doors: *Brard*
Fire-control doors, security grilles: *Gubri*
Upswinging doors: *Nomafa*
Locksets: *Bezault*
Acoustical ceilings: *Plafometal-Placoplatre*
Demountable partitions: *Huppe*
Cabinetwork and custom woodwork: *Brard*
Paints and stains: *La Seigneurie*
Paneling: *Brard*
Resilient flooring: *Briatte (wood), Sarlino*
Carpet: *Heuga*
Raised flooring: *Intercell*
Office furniture: *EFG*
Reception furniture: *EFG*
Fixed seating: *EFG*
Chairs: *EFG*
Interior ambient lighting: *Cegelec*
Controls: *Amdi*
Elevators/Escalators: *Otis*
Accessibility provision: *Otis*
Plumbing: *Balas-Mahey*

Helmut Lang Boutique

Glass-fiber reinforced concrete: *Essex Works*
Cabinetry: *American Woods & Veneer Work*
Dressing rooms: *Eurostruct Inc; Norcore by Norfield; Lumasite by American Acrylic*
Lighting: *Edison Price (downlights); Leviton (porcelain sockets); CJ Lighting (fluorescent lights)*
Glass: *Floral Glass*

La Marina Preschool

Structural system: *Metalco.*
Masonry: *Orco Block*
Metal/glass curtain wall: *Metal Window Corp.*
Built-up roofing: *Manville Roofing*
Elastomeric: *Dex-O-Tex*
Metal: *Berridge Metal, Robertson Decking*
Aluminum windows: *Metal Window Corp.*
Glazing: *Downey Glass*
Skylights: *Kalwall*
Insulated-panel or plastic glazing: *Kalwall*
Entrances: *Metal Window Corp.*
Metal doors: *Timely Doors*
Wood doors: *T.M. Cobb*
Sliding doors: *Hufcor Airwall*
Fire-control doors, security grilles: *Charles Hardy Co.*
Locksets: *Schlage*
Hinges: *Metal Window Corp.*
Closers: *Hoppe*
Exit devices: *Von Duprin*
Pulls: *Hoppe*
Security devices: *Von Duprin*
Cabinet hardware: *Blum*
Demountable partitions: *Hufcor Airwall*
Cabinetwork and custom woodwork: *Wells Cabinet Concepts*
Paints and stains: *Hammerite (for metal), Frazee (stucco and drywall)*
Plastic laminate: *Abet Laminati*
Floor and wall tile: *Dal-Tile (bathrooms)*
Resilient flooring: *Armstrong*
Carpet: *Bentley Carpets*
Other furniture: *Wells Cabinet Concepts*
Interior ambient lighting: *Studio 9one2*
Downlights: *Halo*
Task lighting: *Studio 9one2*
Exterior: *Louis Poulson*
Controls: *Lutron*
Water fountains: *Haws*
Sinks and toilets: *American Standard*

Massachusetts Institute of Technology School of Architecture and Planning

Steel: *Hope's Steel/Glass Entrances, Jamestown Series*
Aluminum: *Custom Window*
Glass: *Temp Glass*
Skylights: *Sunglo*
Upswinging doors: *Raynor Overhead Doors*
Locksets: *Schlage*
Hinges: *Stanley*
Closers: *Norton*
Pulls: *Rockwood*
Cabinet hardware: *Stanley*
Acoustical ceilings: *Eckel*
Cabinetwork and custom woodwork: *Galluzzo, Gordon Merrick, Commercial Casework*
Paneling: *Homasote*
Plastic laminate: *Neramar*
Special surfacing: *Dex-o-tex (terrazzo)*
Floor and wall tile: *American Olean (bathrooms)*
Carpet: *Bigelow*
Office furniture: *Herman Miller*
Reception furniture: *Gehry by Knoll*
Chairs: *KI Versa Chairs*
Tables: *Langley (in the studio)*
Interior ambient lighting: *Lite Control*
Downlights: *Staff*
Lighting controls: *Lutron*

New Jersey Housing & Mortgage Finance Agency

Aluminum: *Kawneer*
Glazing: *Pittsburgh Corning Corporation (glass block); AFG Industries (pattern glass)*
Entrances: *Kawneer*
Metal doors: *Steelcraft*
Wood doors: *Mohawk*
Locksets: *Arrow*
Hinges: *Stanley*
Closers: *Norton*
Exit devices: *Von Duprin*
Acoustical ceilings: *Armstrong (panels), Chicago Metallic (metal gird), Armstrong (suspension grid)*
Paints and stains: *Conlux/ Sherwin Williams*
Wallcoverings: *Essex*
Floor and wall tile: *American Olean*
Resilient flooring: *Azrock, Johnsonite Bases*
Carpet: *Bigelow/Karastan, Gulistan Stevens Carpet*
Office furniture: *Haworth*
Chairs: *Steelcase*
Tables: *Johnson Industries (conference table)*
Interior ambient lighting: *Paralux, Prismglo, Louis Poulsen*
Downlights: *Halo*
Track lighting: *Halo*

Republic Windows & Doors Inc.

Structural system: *Castelite (castellated beams)*
Curtain wall: *Fabral (metal), Efco (ribbon windows)*
Built-up roofing: *Schuller*
Windows: *Republic Windows & Doors (vinyl windows), Efco (aluminum)*
Glazing: *Republic Windows & Doors*
Entrances: *Crane*
Overhead dock doors: *Pierini Iron Works*
Elevators: *Dover*

The Robert L. Preger Intelligent Workplace

Structural system: *Nucor-Yamoto, Littel Steel*
Masonry: *Franco Masonry*
Metal/glass curtain wall: *Josef Gartner & Co.*
Built-up roofing: *Versico*
Metal: *Alumashield*
Steel: *Nucor-Yamoto*
Glass: *Viracon, PPG Pilkington*
Skylights: *Viracon, WASCO*
Insulated panel or plastic glazing: *Bayer USA, Extech*
Entrances: *Josef Gartner & Co.*
Metal doors: *Steelcraft, Josef Gartner & Co.*
Fire-control doors, security grilles, etc.: *Von Duprin, Joseph Gartner & Co.*
Locksets: *Josef Gartner & Co.*
Hinges: *Josef Gartner & Co.*
Acoustical ceilings: *Armstrong World Industries*
Demountable partitions: *AMP*
Cabinetwork and custom woodwork: *Giffen Interior & Fixture,*
Paints and stains: *Porter Paints*
Resilient flooring: *Johnsonite, Armstrong World Industries*
Carpet: *Interface*
Raised flooring: *MAHLE, GmbH*
Office furniture: *Steelcase, Grahl Industries*
Fixed seating: *Steelcase, Grahl Industries*
Interior ambient lighting: *Zumtobel Staff*
Controls: *Siemens Energy and Automation, Zumtobel Staff Lighting*
Accessibility provision (lifts, ramps, etc.): *Garavanta (chairlift)*
Security systems: *Johnson Controls, Honeywell*
HVAC units: *Engelhard/ICC, LTG Lufttechnische GmbH*
HVAC control devices: *Johnson Controls*
IAQ devices: *Siemens, LTG Lufttechnische GmbH, Englehard/ICC*
Cable trays: *OBO Bettermann*

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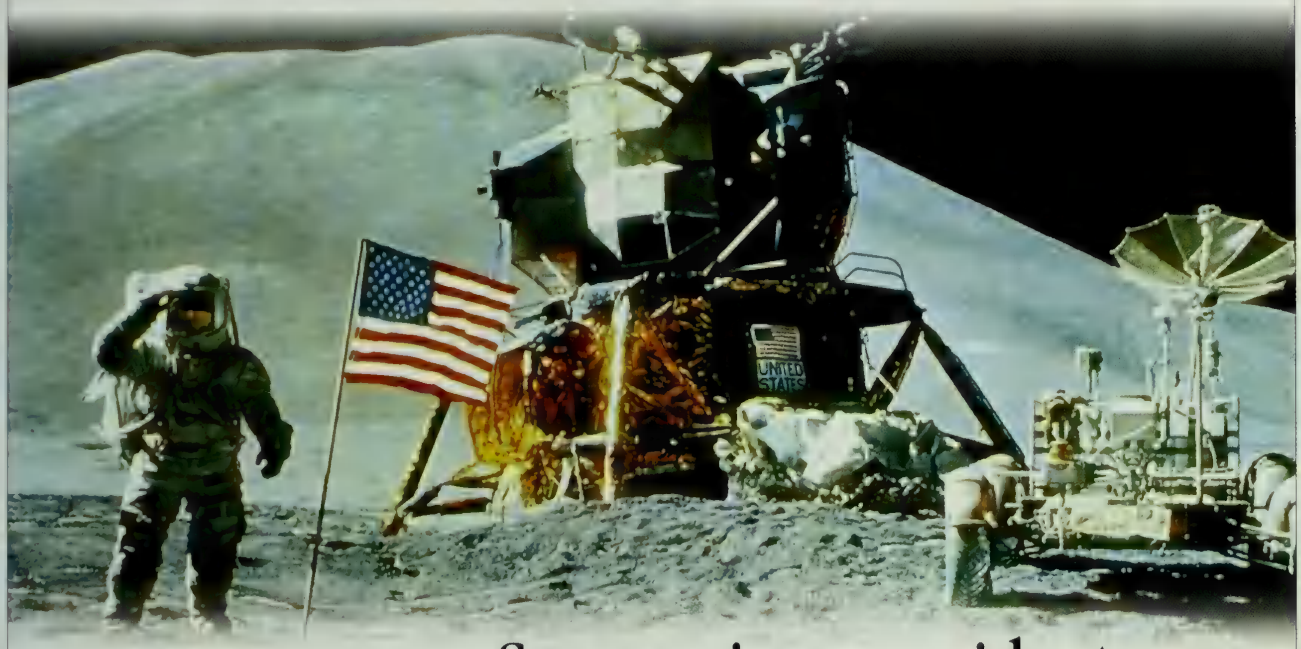

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CIRCLE 55 ON INQUIRY CARD

THE FEE DILEMMA PART I:

Why Architects

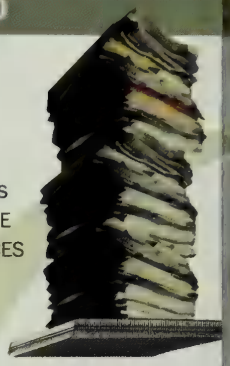
1866-1907

1908-1970

1866
Richard Morris Hunt's lawsuit against a client who refuses to pay HELPS ESTABLISH 5 PERCENT OF THE FINISHED COST OF CONSTRUCTION AS A STANDARD fee for architectural work.

1888
IN HUBERT V. AITKENS, a judge finds that the architect is responsible for any errors in design and for keeping abreast of changes in technology.

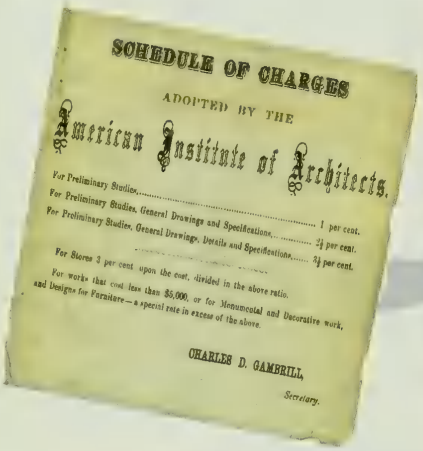
1908
The American Institute of Architects raises its STANDARD FEE FOR FULL SERVICES TO 6 PERCENT.



1866
The American Institute of Architects published the FIRST SCHEDULE OF FEES, which set 5 percent as a customary charge.

1897
The state of Illinois enacts the FIRST ARCHITECTS' LICENSING LAW in the U.S.

1909
The Institute adopts the first PRINCIPLES OF PRACTICE AND CODE OF PROFESSIONAL ETHICS. Architects are forbidden by the code to compete with each other on the basis of compensation.



SCHEDULE OF CHARGES

ADOPTED BY THE

American Institute of Architects.

For Preliminary Studies..... 1 per cent.
For Preliminary Studies, General Drawings and Specifications..... 2½ per cent.
For Preliminary Studies, General Drawings, Details and Specifications..... 4½ per cent.
For Stores 3 per cent upon the cost, divided in the above ratio.
For works that cost less than $5,000, or for Monumental and Decorative work, and Designs for Furniture—a special rate in excess of the above.

CHARLES D. GAMBRILL,
Secretary.

1888
THE INSTITUTE ISSUES THE FIRST STANDARD FORM OF AGREEMENT between owner and contractor, making the architect the agent of the owner.

1870–1929
UNPRECEDENTED WEALTH, combined with new materials and rapid technological advances, means that buildings are becoming increasingly complex.

by Elizabeth Harrison Kubany and Charles D. Linn, AIA

Architects are looking for the holy grail, the secret of what to charge clients. Our profession's attitude toward fees has rendered this the single most confusing topic for architects, when making money should be a natural reward for hard work, ideas, talent, and knowledge. But to understand why architects have such a problematic attitude toward fees, we have to comprehend the problem.

There are reasons why the topic of fees is shrouded by fear and mystery. Architects did not arrive at their current state of financial anxiety overnight. The question of how to charge clients for value received has plagued them from the early days of the profession. The saga includes a gradual but ever increasing responsibility without commensurate compensation, two Justice Department lawsuits, and a profession whose complexity has grown exponentially over the years.

This month, ARCHITECTURAL RECORD looks back at the history of our profession to see how this issue became so complex. Next month, we will suggest some possible solutions by introducing the reader to strategies—ranging from conventional wisdom to more progressive approaches—for improving architectural fees.

The profession emerges

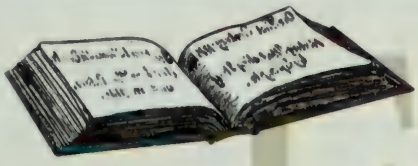
A dispute over fees led to the emergence of the modern notion of architecture as a profession. In 1861, Richard Morris Hunt sued a client who refused to pay his fee. During the trial, several architects testified that their customary charge was 5 percent of the project's cost, and the jury agreed, setting 5 percent as the standard accepted minimum compensation. The litigation launched a new era, setting an important precedent for the recognition of architects as professionals—no longer

ILLUSTRATIONS BY JOAN HALL

Don't Charge Enough

1971 to PRESENT

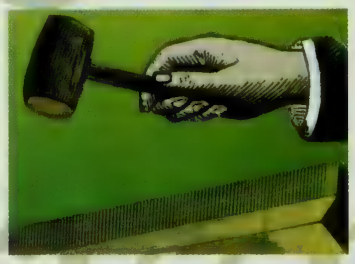
1940s
The responsibility for CREATING FEE SCHEDULES SHIFTS TO INDIVIDUAL CHAPTERS, though the 1951 *Handbook* still recommends their use.



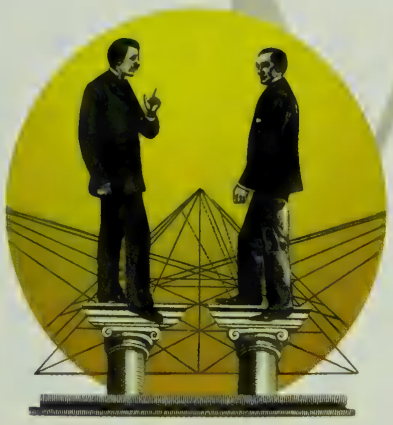
1971
THE AIA SIGNS A CONSENT DECREE WITH THE U.S. JUSTICE DEPARTMENT and agrees to remove any clauses from its code of ethics that would forbid architects from "submitting price quotations for architectural services."

1975
To make up for the absence of fee schedules, the AIA issues its COMPENSATION MANAGEMENT GUIDELINES FOR ARCHITECTURAL SERVICES: A MANUAL ON COST-BASED COMPENSATION.

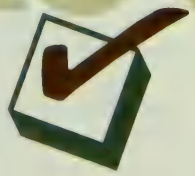
1985–90
The Justice Department conducts a Grand Jury investigation into whether a violation indeed existed. Late in 1989, THE JUSTICE DEPARTMENT THREATENS CRIMINAL INDICTMENTS, and the Institute engages in negotiations to avoid them. A new consent decree is signed in 1990, which added that the offering of free or discounted services could not be considered unethical.



1966
The AIA's Standards of Professional Practice continue to forbid architects to compete on the basis of fees. Architecture firms are surveyed by Case and Company for the AIA. The survey shows that ARCHITECTS ARE LOSING MONEY ON ONE OUT OF FOUR JOBS.



1985
After conducting a survey on fees and compensation, the CHICAGO CHAPTER OF THE AIA ISSUED ITS COMPENSATION AND FEE POLICY STATEMENT. The CCAIA rescinded the statement after review by the AIA's general counsel, who determined that this document violated the 1971 consent decree.



merely building designers engaged in construction trades—who are entitled to a fee for design.

Within a few years, on June 4, 1866, the fledgling American Institute of Architects issued its first document, a "Schedule of Charges," which further confirmed 5 percent as the proper charge for architectural services, including preliminary studies, construction documents, and site visits.

The primary accomplishment of the first schedule was to set a fee for a whole service, rather than itemize charges by the drawing or by the hour. This innovation set architects apart from members of the building trades and unions—a distinction the profession was anxious to make. "It was an easy way to calculate compensation," says Tony Wrenn, HON. AIA, who recently retired as the Institute's archivist. "But the point was really to establish what an architect provided, and what clients were going to get for their money. Without that, there was no rationale for hiring an architect." The document's main flaw was that it did not establish how the involvement of architects could produce better buildings than contractors working alone.

The all-knowing architect

As the 19th century progressed, the growing complexity of building technology vastly increased the knowledge required for architects, but fees did not keep up. Taller structures emerged in response to rising land values and new building materials. The advent of systems such as electricity, indoor plumbing, centralized steam heating, and ventilation made daunting the range of information that an architect had to master.

In a landmark 1888 New York case, *Hubert v. Aitken*, the courts ruled that technical knowledge is a reasonable requirement of an archi-

An Architect should be high minded, not arrogant but faithful, just, and easy to deal with; without avarice. Let him not be mercenary nor let his mind be preoccupied with his remuneration. At the request of others, not at his own, should he undertake a task.

–Vitruvius, Roman architect and engineer in the reign of Augustus Caesar, 1st Century B.C.

tect. In that case, the architect had improperly sized a boiler chimney but insisted that the error should have been caught and corrected by the plumber. The judge wrote: "No one would contend that at this day an architect could shelter himself behind the plumber and excuse his ignorance of the ordinary appliances of sanitary ventilation by saying that he is not an expert in the trade of plumbing . . . why should not the architect be expected to possess the technical learning that is exacted of him with respect to the other and older branches of his professional studies?" No mention was made of compensating architects for this technical acumen.

As time passed, the increasing need for more detailed construction documents and on-site supervision made the architect's role even more burdensome. In another 1888 landmark decision, the AIA issued its first standard form of agreement between owner and contractor, the forerunner of the AIA's Document A201, which increased the architect's liability even more by making him the owner's agent.

A year later, in 1889, another case, *Coombs v. Beede,* decided the architect's professional status and consequent duties. The court listed the architect's "skills, ability, taste, and judgment" as his hallmarks. In addition to the technical learning cited in Hubert, the architect had to possess the aesthetic sense and capacity to make decisions on the client's behalf—a role analogous to that of lawyers and doctors. Again: no mention of money.

Looking back, it is difficult to understand why the AIA's 1888 constitution and bylaws included a 5 percent fee schedule very similar to the one it had published in 1866, despite the increasing scope of the architect's work. More imperatives lay ahead, however.

Licenses, 6 percent, and a code of ethics

In 1897, the architect—or, more precisely, the person hoping to become an architect—took on yet another requirement when, after years of debate, Illinois became the first state to enact a licensing law. Although more than 600 architects entered the profession under a grandfather clause, the others could receive licenses only after presenting a diploma from a school of architecture or passing a comprehensive three-day examination that covered construction, strength of materials, sanitary codes, and a one-day sketch problem. Other states soon followed. Finally, after decades of steady changes, architects made one small leap forward in gaining compensation: in 1908, the AIA raised its fee schedule to 6 percent.

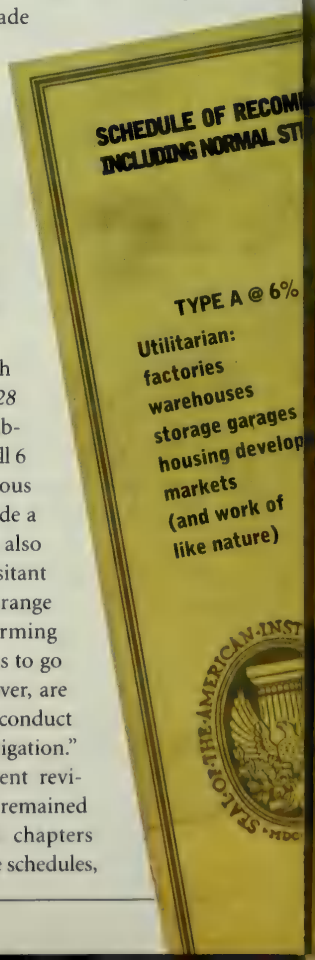
This schedule was not mandatory, however. Even then, open competition made firms fight for certain jobs; some firms undercut competitors based on fees, what some might call *bottom feeding,* today. In his 1918 essay "How Should an Architect be Paid?" Charles Harris Whitaker, then the editor of the *Journal of the American Institute of Architects,* explained that competition developed "among those who practiced architecture, whether as professionals or as amateur builders. This led to a reduction in the fee charged as a method of obtaining business."

To combat such competitive bidding, the AIA tried to regulate its members. In 1909, after much discussion, the AIA issued its first *Circular of Advice Relative to the Principles of Professional Practice and Canons of Ethics,* which imposed rules of conduct on its members. It stipulated the following: members could not advertise, engage in the building trades, offer free services, or compete for work on the basis of professional charges. In short, architects had to answer to a higher authority.

An inherent conflict existed between the AIA's schedule of fees and its code of ethics. On one hand, the fee schedule was advisory, not mandatory; on the other, the code of ethics deemed competition between architects on the basis of fees unprofessional. So architects were pricing their services according to a general average, not individual merit, creating the impression that all architects were entitled to the same fee for services rendered. According to Whitaker, this set up several problematic conditions: first, it "made it possible for the incompetent to creep into the public esteem while demanding equal remuneration; second, it placed a great handicap before the young man who desires to enter the profession by forcing him either to ask a fee to which he is not entitled, (and seldom can obtain) . . . or by treating him as a renegade because in order to establish himself in practice, he works for less [compensation] than established men."

While some things changed, much remained the same. By the time the *1928 Handbook of Architectural Practice* was published, the schedule of proper charges was still 6 percent. The AIA had amended the various means for compensating architects to include a fee-plus-cost method. The *Handbook* also acknowledged that architects were often hesitant to enumerate their fees, stating, "The strange timidity that Architects display in informing clients of their charges and their willingness to go forward without any understanding whatever, are disreputable to them as men of affairs. Such conduct leads to misunderstandings, disputes, and litigation."

Although the *Handbook* underwent revisions over the next 30 years, the concept remained constant. By the 1951 *Handbook,* local chapters assumed the responsibility for developing fee schedules,



and most came up with complicated multitiered charts that showed what firms should charge for different kinds of work.

The *Handbook* still advised its members to follow these fee schedules, and there was very little regard for firms that did not. AIA members Clinton Harriman Cowgill and Ben John Small wrote in their 1949 book, *Architectural Practice*, "If any firm wishes to go on record as charging less than the others, it should do so . . . the service of some firms is undoubtedly worth less than that of others . . . When fees are cut beyond a certain point, the only way to avoid loss is to reduce the quality of the service, or to resort to dishonest practices. Either of these is distasteful and reprehensible . . . Rather than resort to the latter, it would be more admirable to engage in a bolder, outright criminal career."

Despite the fact that a majority of firms did adhere to the fee-schedule recommendations, the profession was sliding into economic trouble. In 1966, the AIA commissioned a study, *The Economics of Architectural Practice*, from Case and Company, a San Francisco management consultant, to examine the actual profits and costs of running architectural practices. Case and Company visited and conducted interviews with 223 firms in 47 states. Among the conclusions, the consultant determined that "most firms do not understand the significance of costs . . . nor maintain adequate time and cost records." Furthermore, "the average architect loses money on one job out of four."

The report showed that four-fifths of the firms used the percent-of-construction-cost method

ACCORDING TO CARL SAPERS, "THE ACTIONS OF THE JUSTICE DEPARTMENT IN THE 1960S AND 70S HAD A DEPLORABLE AND TERRIFYING EFFECT ON PROFESSIONAL LIFE IN AMERICA AND TODAY WE ARE REAPING THE HARVEST OF THE POISONOUS SEED THAT WAS PLANTED."

for setting fees (averaging $6,820 profit per project). Between 1960 and 1966, costs for outside consulting and technical and support staff had soared in comparison to building costs between 1960 and 1966, so architects using this method saw diminishing profit margins (see chart). The average salary for principals in firms billing more than $2 million per year was $29,629. The Case study offered a valuable glimpse under the microscope for the profession. In retrospect, it highlights the fact that a fee schedule, based on a percentage of construction cost, was not a panacea.

The percentage method had two major shortcomings. First, there was an ethical issue. Although the architect stood to make more money as building costs rose, as the owner's agent, the architect would try to keep the costs low, but was not compensated for extra work required to do so. Second, there was a distorted equality dilemma. In theory, using the percentage-of-construction-cost method, the fee for a project would be the same no matter which firm was hired to do the work. But each architecture firm provides different levels and kinds of service, as well as radically different results.

The end of fee schedules

Despite clear signs of economic troubles, the profession clung to the belief that architecture was not a product to be priced according to comparative cost. In the July 1966 revisions of AIA Document J330, the Standards of Professional Practice, the Institute still held fast to the notion that architects could not compete with each other based on fees. In the fall of 1970, the AIA reinforced this notion when it adopted new ethical standards stating that the architect should discuss scope and compensation with clients only after they had been selected on the basis of professional qualifications.

Around the same time, government attitudes toward antitrust laws were shifting. Before the late 1960s, Congress took the position that professions were exempt from the Sherman Antitrust Act because they were not involved in trade or commerce. But, the Justice Department began to investigate the ethical standards of many professionals, including lawyers, doctors, accountants, and engineers, on the grounds that their standards incorporated thinly dis-

A NORMAL ARCHITECTURAL FEES FOR COMPLETE PROFESSIONAL SERVICES
, VENTILATING, MECHANICAL AND ELECTRICAL ENGINEERING

ommended by the Georgia Chapter of the American Institute of Architects, 1947

TYPE B @ 7%
dards:
els
ice buildings
hools
partment houses
heatres
churches
courthouses
colleges
jails

TYPE C @ 8%
Specialized:
banks
private residences
hospitals
laboratories
museums
club houses
(and work of like nature)

TYPE D @ 10%
Exceptional:
monumental buildings
shop fronts
fixtures
landscape
swimming pools
furniture
(and where skill and study is high in proportion to costs)

The above schedule applies to work costing up to and including $300,000

The following graduated scale applies to work costing above $300,000 and may be interpolated to suit "in between" costs.

t of work up to:	6%	7%	8%	10%
300,000	5.75	6.75	7.75	9.75
500,000	5.50	6.50	7.50	9.50
1,000,000	5.25	6.25	7.25	9.25
2,000,000	5.00	6.00	7.00	9.00
2,000,000	4.75	5.75	6.75	8.75
4,000,000	4.50	5.50	6.50	8.50
5,000,000				

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guised violations of the Sherman Act. The professions continued to maintain that the antitrust laws did not apply to them.

And so it came as no surprise when the Department of Justice advised the AIA's attorneys, on December 7, 1971, of its plans to file suit against the Institute because its ethical standards placed limitations on the Institute's members and amounted to a restraint of trade. Six months later, by the 1972 convention, negotiations resulted in a consent decree, a voluntary agreement accepted in lieu of litigation, which restricted the Institute from imposing any standard or policy prohibiting members from submitting price quotations for architectural services. Delegates on the convention floor voted that the AIA should accept the terms of the consent decree rather than continue to fight the Justice Department.

The consent decree struck fear in the hearts of many architects, who worried that once the floodgates of competitive bidding opened, bidding wars for architectural services would erupt and design quality would erode. The profession's high standards were at stake. The minority opinion asserted that the status quo—fee schedules and ethical standards—should be maintained to prevent this scenario.

The minority opinion—which called for the AIA to fight the Justice Department in court rather than sign the decree—was most eloquently expressed by Walter Wagner Jr., then editor in chief of Architectural Record, in his May 1972 editorial: "The whole idea of early emphasis on price takes on the aspects of competitive bidding by architects with very different skills, staffs, and experience—in the absence of identical documents for an identical end product, which is what contractors bid on the basis of . . . and that equates professional architectural services with buying a used car."

"THIS PROFESSION SHOULD THANK THE JUSTICE DEPARTMENT," SAYS JAMES SCHEELER OF THE AIA.

But the majority argued that it had become increasingly difficult for architects to avoid discussion of compensation prior to their selection for a particular project. On June 19, 1972, the AIA settled this lawsuit with the Department of Justice by signing the consent decree. At the time, those holding the minority opinion considered this the beginning of the end of the profession. But, as John Morris Dixon, FAIA, editor in chief of *Progressive Architecture* from 1972–95, points out, the AIA had little choice but to settle the lawsuit: "The Justice Department had unlimited money and unlimited staff. Going to court would probably have been a losing proposition."

A move to cost-based compensation

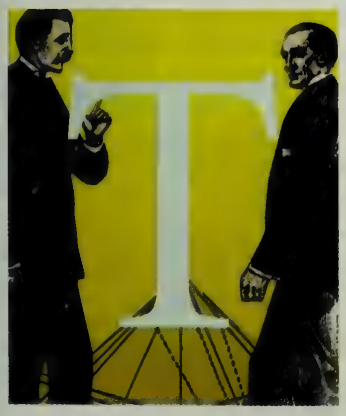
Although the 1972 consent decree did not directly address the fee-schedule issue, a subsequent case against the Virginia Bar Association determined that such schedules were a form of price fixing. In response to this decision, the AIA asked the states to rescind their fee schedules and subsequently issued a series of publications dealing with service-delivery management. One of these documents, *Compensation Management Guidelines for Architectural Services: A Manual on Cost-Based Compensation* (February 1975), outlined the ideas and methods behind cost-based compensation. The concept was simple: architects would establish what it would cost in labor and overhead to complete a project. They could then increase this figure to allow for profit. The introduction of this new methodology for calculating compensation was an important step forward for the profession, although it also had the unfortunate consequence of reinforcing the notion that what architects have to sell is their time.

A second consent decree

In subsequent years, the American economy sank into recession and the profession struggled economically. In 1984, to help its members deal with their financial difficulties, the AIA's Chicago Chapter issued a compensation and fee policy statement. The AIA's general counsel immediately asked the Chicago Chapter to rescind the statement after distribution, because it violated the 1972 decree. But it was too late. In 1986, the Chicago Chapter was notified that the Justice Department's Antitrust Division was investigating alleged violations of the decree. According to Dixon, "during this second investigation, the Justice Department essentially terrorized the AIA. Documents were confiscated and members were subpoenaed and required to testify before a grand jury. There was a threat of criminal prosecution."

From December 1989 to June 1990, the AIA conducted settlement discussions with the Justice Department to work out an agreement on a civil, rather than a criminal, basis. Their dialogue resulted in a new consent decree, the most salient point of which established that the AIA and all its chapters would "refrain from adopting any policies, rules, bylaws, or resolutions, or issuing official statements, that would restrain AIA members from a) submitting competitive bids or price quotations, including cases where price is the principal consideration in choosing an architect; b) providing discounts; and c) providing free services."

The consent decree expires in October 2000. While the AIA will no longer be required to follow the decree's compliance requirements,



he earlier practice of architecture in this country was very frequently shaped by men whose independent wealth allowed them to indulge in a fashionable occupation, without much regard for profit. Their highly inefficient technic in office management and production engendered many of the deplorable habits that harrow the less affluent practioners of today.

–Royal Barry Wills, The Business of Architecture, 1941

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such as holding annual programs on antitrust laws and providing written certification of compliance, the "substantive requirements of decree that are specifically identified as being prohibited, remain as conduct that the AIA and its components should not engage in," according to David Perdue, HON. AIA, the AIA's associate general counsel.

For better or worse?

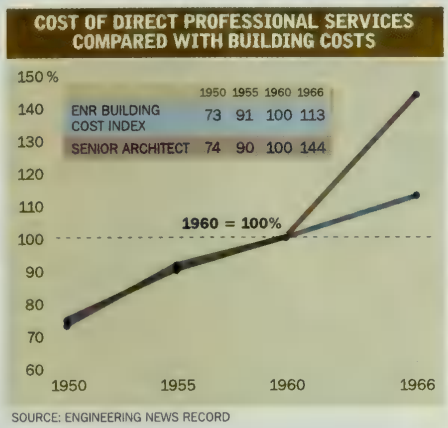
The original code of ethics reflected a prevailing attitude that architects were engaged in a profession, not a business, and intended to protect the dignity of the practice of architecture. This stringent ethical code was a source of pride among architects because it affirmed that the architect's role in society transcended purely mercenary goals. Seen through the eyes of nonarchitects, however, the fee schedules and ethical prohibitions that the Institute imposed on its members before the consent decrees seemed to protect only the architect while doing nothing to benefit the public and clients.

Beyond the immediate disappearance of fee schedules and a new need for architects to negotiate for projects based on price, the consent decrees have had a far more profound effect: As attorney Carl Sapers says, "As a lawyer, I seriously doubt the AIA could have fought the Justice Department and won. But the consent decrees have weakened the standing of architects enormously. The actions of the Justice Department in the late 1960s and early 1970s had a deplorable and terrifying effect on professional life in America and today we are reaping the harvest of the poisonous seed that was planted. These professions [architecture, medicine, and law] have come to look much more like trades. I have to ask, even if fee schedules and codes of ethics meant that people were paying more for professional services, was that more important than maintaining the integrity of professions in America?"

James Scheeler, FAIA, a former CEO of the AIA and a current resident fellow for international relations, takes the opposite view. "This profession should thank the Justice Department," he said. "As a result of the consent decrees, we have had to learn to deal with competitive fees and the business aspects of architecture. American architects have been highly successful and competitive in foreign markets, in part because the understanding of the business of delivering professional services is finely tuned. If we still had fee schedules, we would not have been forced to learn these things."

In the context of the contemporary business environment, where competition for new work is fiercer than ever, architects have sometimes romanticized fee schedules as shielding them from competitive environments and allowing them to concentrate on their larger responsibilities. But, as is now clear, architects competed on the basis of fees even when fee schedules existed. Today, people decry the bottom-feeding phenomenon, but most firms, including those that do not regularly cut fees to undermine the competition, have probably done so at one time or another.

With the percentage-of-construction fee basis, architects lose money when construction costs rise more slowly than the cost of running a practice.



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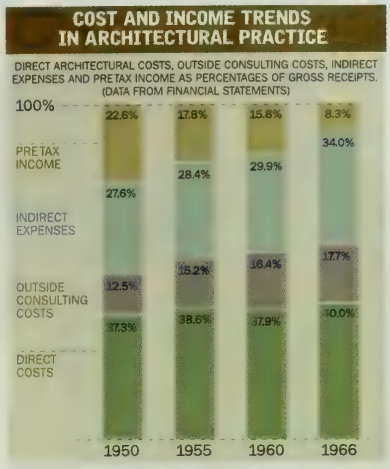

Different means, same end

There is strange comfort in the fact that—in terms of fees matching the scope of work—the profession is really no worse off financially today than when the schedules and the code of ethics were in force. In March 1999, *AIArchitect* reported that "over a quarter of firms indicated that only about half the time do fees reflect the actual amount of work actually expended"—almost the same finding that Case and Company made in 1966. *AIArchitect* also said that "one in six firms indicated that this is the case only occasionally or almost never."

The method of calculating fees has had remarkably little effect. In 1966, according to the Case Study, 80 percent of firms used the percentage-of-construction-cost basis to set fees (a method whose problems we have already shown). Today, the fixed-fee method is the most common. The *1997 AIA Firm Survey Report* found that nearly half of all firm billings were based on fixed fees while a percentage of construction costs accounted for only about 20 percent of industry billings.

Sacrificing profit

Architects' inability or unwillingness to obtain good fees must have other causes. Michael Strogoff, AIA, a Mill Valley, Calif.-based negotiations consultant, suggests three primary reasons: First, within our

urs is a profession of inherent pitfalls. We often accept fees that are inadequate. We tend to forget costs in our unending drive to achieve better structures. We spend too much time in study and research. Our endless quest for perfection robs us of our justifiable profits.

–Morris Lapidus, Architecture: A Profession and a Business, 1967

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professional culture we share an unwillingness to walk away from a great commission, no matter what the cost. Architects knowingly accept low fees for fear of losing jobs or creating adversarial relationships. Second, sometimes architects fail to obtain fair fees simply because they lack business training, negotiating skills, or an understanding of their real costs. Finally, architects have had difficulty explaining the value of what they have to offer.

THESE ARE GOOD TIMES FOR ARCHITECTS. YET FLUSH TIMES HAVE NOT RESOLVED ARCHITECTS' PERSISTENT FINANCIAL COMPLAINTS.

The hesitancy to turn down great commissions pervades our profession and causes a disconnect between the quality of a firm's work and its business activity. In the unending drive to achieve better structures, architects tend to forget their costs. The egoism that drives some people to become architects in the first place also plays a role; we see projects as occasions for self-expression, and so the emotional opportunity is divorced from the business reality. But a more pragmatic rationale is also sometimes cited. As Janis Reiters, AIA, of Design Management Corporation in Natick, Mass., says, "If our fee doesn't match the scope of services on a project, it is probably because we need that job." Many firms sacrifice justifiable profit when business is slow and they need the work.

According to Michael Tardif, ASSOC. AIA, director, professional practice, at the AIA, this cycle can be stopped: "If architects were rigorous about understanding their costs when preparing fee proposals, they would be less willing to negotiate their fee away without cutting scope," he says. But the growing complexity of the business of architecture has made an understanding of costs ever more elusive. As Strogoff says, "Firms are busier than ever. They are reporting more profit, as they should in an economy like this one, but the percentage increase doesn't compare to the recent growth in construction. Overhead is the reason."

By all admissions, these are good times for firms. Yet flush times have not resolved architects' persistent financial complaints. One source of current trouble is payroll. Because firms are so busy, employees are in high demand across the country. The 1997 AIA report, *Compensation at U.S. Architecture Firms*, found that the average salaries for all architects (excluding principals and partners) went up 22 percent between 1990 and 1996. Today, by some estimates, this number is closer to 30 or 40 percent. There has been no comparable rise in what architects charge. As George Heery, principal of the Brookwood Group, puts it, "The law of supply and demand has taken effect on the salary level, but not at the fee level."

Architects' salaries are not the only overhead costs that have increased. As Tardif says, "over the last 25 years architecture firms of all sizes have evolved from professional practices into businesses with all the attendant complexity and specialization of management expertise in finance, human resources, technology, and strategic planning." According to the *1997 AIA Firm Survey Report*, marketing expenses amounted to 8 percent of net billings in 1996, up from 6 percent in 1990; 91 percent of firms were covered by professional liability insurance, up from 81 percent in 1990; and technology spending accounted for 7 percent of billings in 1996, a record high. In addition, accounting, human resources, public relations, and other nonarchitectural personnel—all generating overhead expenses—are becoming more prevalent in architecture firms.

Overhead demands differ radically from firm to firm—depending on size, location, and the nature of the practice. But in general, architects have not done a good job of computing their real costs. As William F. Fanning, director of research for the *Professional Services Management Journal* says, "In other industries, future projections are used to determine prices. Architecture is the opposite. We use last year's cost model to determine next year's prices."

A light at the end of the tunnel

More significant, architects do not understand how to place value on their services. Roger Brady, AIA, an architectural consultant from Salinas, Calif., believes that architects price their services in a backward manner, almost as if they were marking up retail goods. "A facelift costs thousands of dollars, but you are only under the knife for 30 minutes. In this case there is no relationship between the time the doctor spends performing the operation and its value to the patient. Architects, on the other hand, have been taught that their time is what they have to sell, when it is their service and expertise that are valuable."

No matter what the problems are, it is time to get back on track. Architects have struggled with this issue for too long. And the price has been very high. Some architects have been forced to settle for inadequate fees and a resulting poor lifestyle and low self-esteem. Or they have compromised the quality of their work to make their fees achievable. Either the architect pays when fees are too low or else the built environment— and, therefore, the image of the entire profession—suffers.

There is a light at the end of the tunnel. We have heard a resounding yes, that it is possible to make money as an architect while still creating great buildings. Next month, we will introduce several methods—from visionary ideas to conventional wisdom—that architects are using to boost their fees. These are architects who, rather than trying to slice the same pie in different ways, are learning to design a bigger pie. Stay tuned. ■

A basic principle of our profession is that the worth of architectural service must be measured by many factors other than price. We believe that the consent decree threatens this principle, is wrong and should be resisted.

–Funding Professional Commitment, Pennsylvania and California Regions, 1972

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THE FEE DILEMMA *continued*

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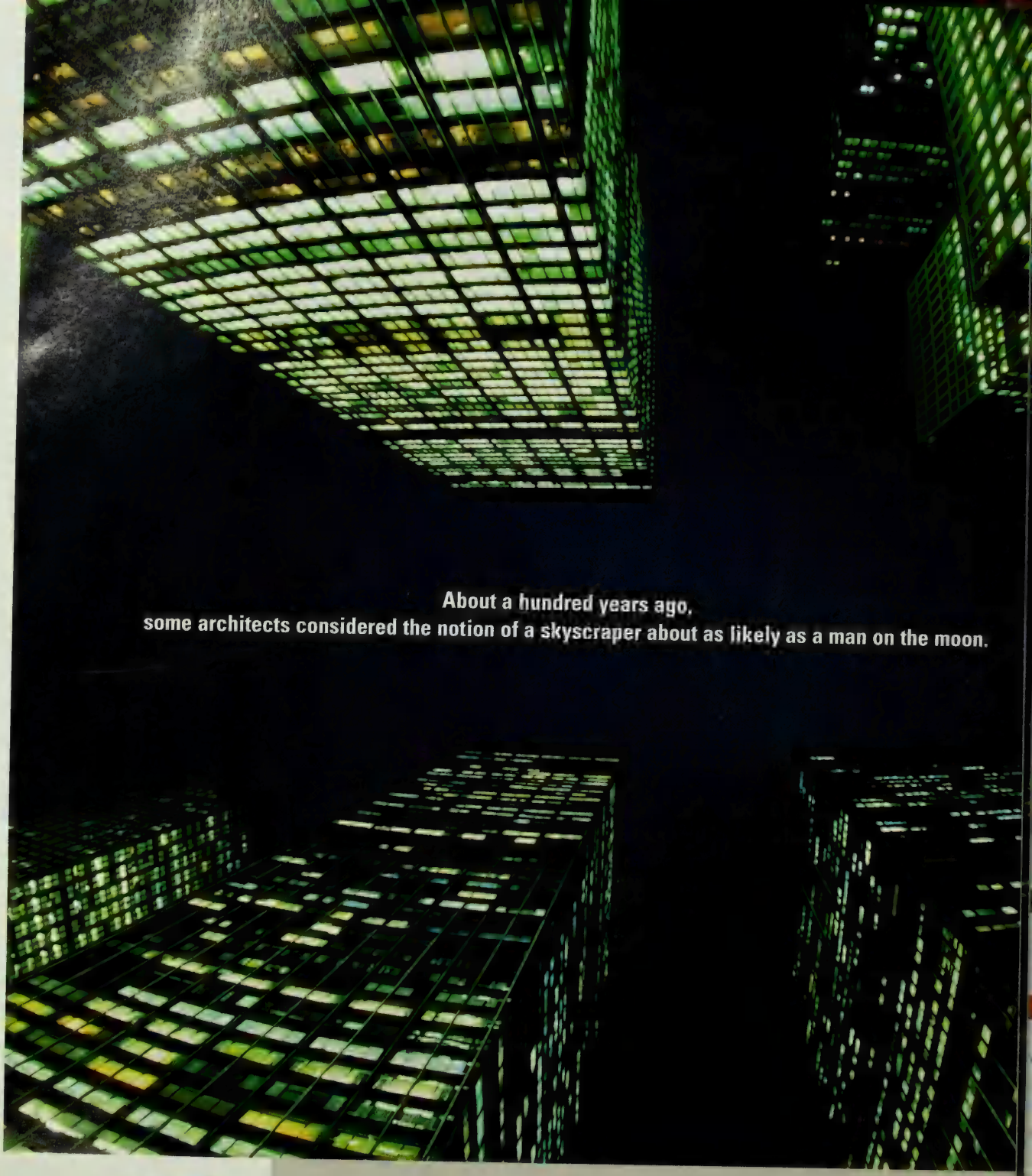

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WHETHER CELEBRATED OR CONCEALED, COMPUTER TECHNOLOGY INFRASTRUCTURE IS A DESIGN FORCE THAT ARCHITECTS ARE ADDRESSING IN INNOVATIVE WAYS.

by Jerry Laiserin, AIA

The technologies of information processing and communication are pervasive, shaping the ways that people interact, shop, make friends, and manage their finances. The amount of electronic mail sent over the Internet recently surpassed the amount of paper mail sent through the post office. It's not surprising, then, that the same technology that's reshaping lives is reshaping buildings.

Computer technology renders some building programs obsolete, as when automatic teller machines replaced most of the functions of full-service banks. Technology may enable elements of disparate building programs to merge—for example, the computerized, self-service business centers in hotels and airports—in what William J. Mitchell, dean of architecture and planning at MIT, calls "recombinant architecture." Meanwhile, new building types, like university computer science centers, arise in response to technology-driven requirements.

Computers and communications may alter the building program in more subtle ways. Back office or behind-the-counter functions, once reserved for employees, move out front to customer-accessible information kiosks in places like bookstores or museums. Computerized filing systems and reconfigurable voice and data networks transform business and educational environments by allowing occupants to plug in, work, and collaborate anywhere within an office or school. Remote locations are also easily linked, creating what Mitchell calls "artificial adjacency."

New opportunities

Designing the infrastructure for the digital data streams that support these new building programs is a new discipline called information engineering. "While mechanical, electrical, and plumbing engineers address HVAC, power, and water, information engineers treat everything from wireless antennae to wired risers, shafts, chases, and access points for information. It's as if information were a fourth utility," says Herb Hauser, president of Barnes Wentworth, an information engineering firm in New York City.

While information distribution systems are not as bulky as ducts and piping, the need to provide access to cabling and to allow room for future changes and additions greatly increases the space allocated to cable risers, wiring closets, and computer rooms. Under-floor distribution systems often require increases in floor-to-floor heights. And high-speed network cables cannot be bent to tight radii or sharp angles without crimping their information-carrying capacity, a limitation that translates to broad, space-consuming sweeps for cable trays and raceways.

With the need for information access to be everywhere in a building, the density of connections or ports can run as high as one access point for every 10 square feet of space. Such a requirement not only strains the distribution capacity of access floors and cable trays, but also makes demands on other building systems. For example, the mechanical system must be able to dissipate the additional heat, or plug load, thrown by the hardware. The electrical system must have greater capacity and reliability—and often a backup power system—to support sensitive electronic gear. And lighting from both natural and artificial sources must be moderated to eliminate glare from monitors and other displays.

INFORMATION ENGINEERING HAS BECOME A FOURTH UTILITY.

Celebrating technology

Some architects are very direct in expressing information technology within a space—not the flashy pseudo information employed in some buildings, where technology is blown out of scale like a giant video game, but thoughtful and honest ways to demonstrate that technology should be accessible and supportive of everyday interactions. The buildings that employ these tactics are, logically enough, those whose occupants heavily rely on high information content, such as schools, museums, and financial institutions.

In the future, information technology is likely to exert an even stronger influence over an even wider range of buildings. Environments already identified as high tech will continue to evolve to accommodate interactive technologies. Furthermore, seemingly low-information-content building types, like stores, restaurants, and houses, will gradually incorporate more technology to satisfy the demands of their occupants for access to information. At the height of the Industrial Age, Le Corbusier famously decreed the house "a machine for living in." Someday soon, a Corbusier of the Information Age will be designing information-driven "machines for thinking in." ■

Contributing Editor Jerry Laiserin, AIA, consults, lectures, and writes about the impact of information technology on the practice of architecture.

WWW *Go to www.archrecord.com and click on News/Features/Dialogue for more information about each of the case studies presented.*

MORGAN STANLEY DEAN WITTER BRANCH

In the same way that branch offices of banks succumbed to ATMs, full service stock broker branch offices are threatened by online trading.

Dean Witter, the retail broker [illegible] of Morgan Stanley Dean Witter, represents a new hybrid of full service brokerage and digitally [illegible] self service. Brennan Beer Gorman Monk (BBGM) Interiors of New York City [illegible] a prototypical neighborhood branch in New York City's [illegible] that gives form to these dual functions.

The [illegible] square foot space, which [illegible] through [illegible] ground floor location, was not suitable for a brokerage at all before the advent of networked technology. The plan resembles a dog bone, with a windowless shank running north to south and ending in a glass fronted room on each side street. In the room at the north end, customers [illegible] to research and account information via freestanding computer kiosks. [illegible] are in the [illegible] of the [illegible].

BBGM installed a raised flooring system to [illegible] the information infrastructure linking the front and back offices. To express this flow of information, as if revealing the digital pulses within the under-floor cabling, the designers set a zigzagging illuminated stock ticker under plexi flush with the floor. This echoes the multiple stock tickers that span the Broadway facade. To lure customers, BBGM suspended a giant cube of computer monitors displaying financial news just inside the main entrance.

William Whistler, AIA, a principal at BBGM, reports that the easy accessibility of both information and service in the design has made this branch office, completed in [illegible], one of the client's most heavily trafficked nationwide. *JL*

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CIRCLE 61 ON INQUIRY CARD

TECH MUSEUM OF INNOVATION

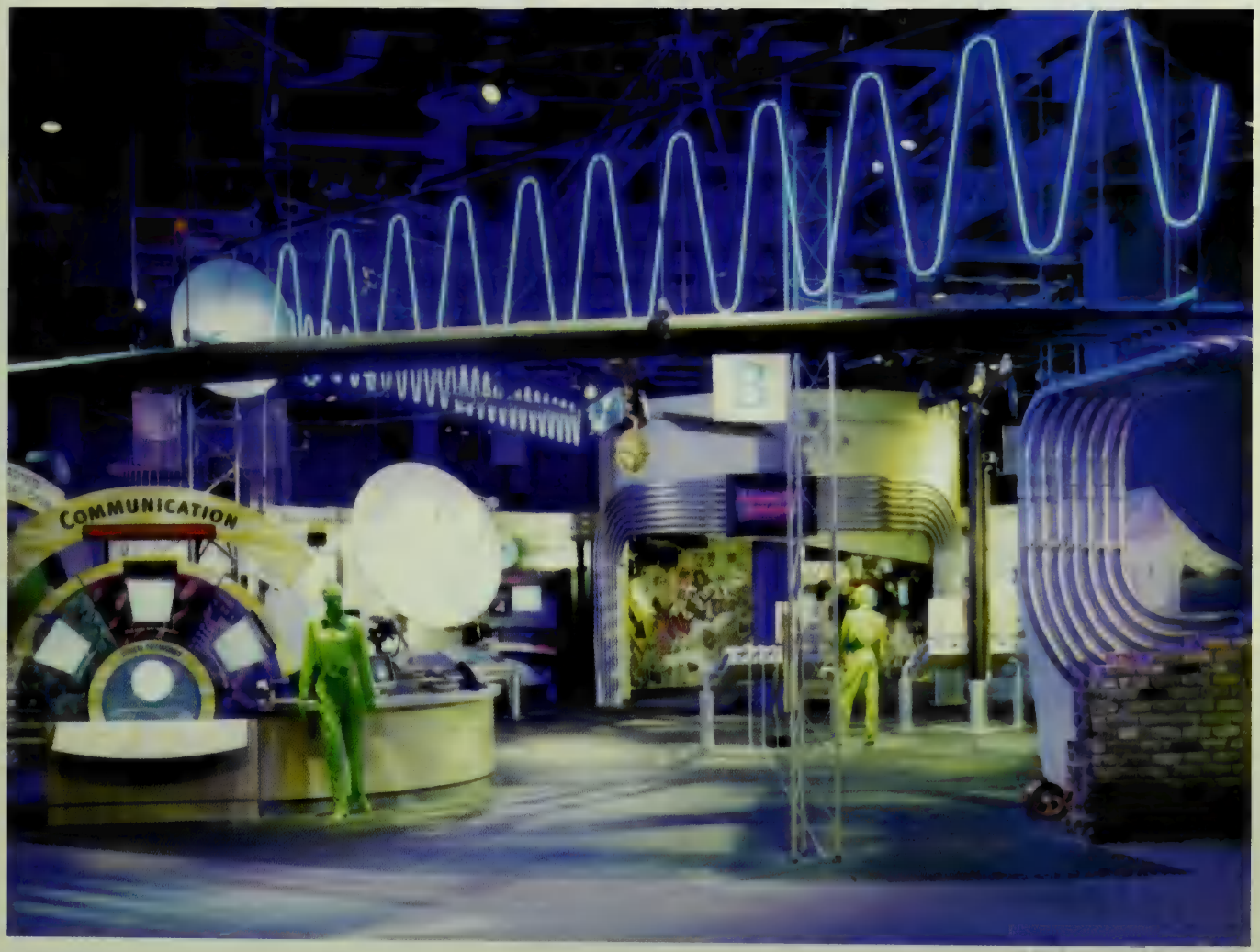
Computer technology is shaking museums out of their dusty past. Glass cases of artifacts are giving way to interactive, multimedia displays, especially when technology itself is the "artifact," as it is at the Tech Museum of Innovation in San Jose, Calif.

"The client wanted to celebrate technology in general and display it as a friendly, integrated part of everyday life," says William L. Williams, AIA, of the Steinberg Group in San Jose. The firm served as executive architect for the museum, with Ricardo Legorreta of Mexico City serving as design consultant.

Completed in 1998, the 112,500-square-foot museum is divided into three levels, two above grade and one below. The street level functions as an extension of the city sidewalk. Pedestrians slip around the curve of the theater enclosure into the lobby, which provides access to the museum cafe and store. The sound and projection gear for the museum's IMAX theater is gleamingly displayed through a curved glass wall in the main lobby. Multistory atria afford glimpses of technology exhibits that include communications satellites and antennae.

The designers laid out large, flexible, loftlike areas, instead of formal rooms, to reflect the interconnectedness of the technologies on display and to accommodate frequent changes in exhibits. Because so many of the exhibits depend on computer-display kiosks, lighting was an important consideration. Says Williams: "We chose to open the building not only to the street but also to natural light from above," consistent with the programmatic requirement of making technology seem friendly. Shade controls installed in windows and skylights minimize glare, and computer-display kiosks were carefully placed with regard to light sources, also to avoid glare.

The curators sometimes choose to divide larger galleries into smaller rooms when mounting an exhibit, necessitating flexibility in lighting, power, and information distribution. This is handled by exposed lighting grids, open cable trays, and catwalks within the ample clear space made possible by the building's floor-to-floor height of 22 feet. Rather than obscure this infrastructure by painting it a neutral tone, the architects chose to celebrate it with vivid purple. *J.L.*



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CIRCLE 62 ON INQUIRY CARD

SMITH ACADEMIC TECHNOLOGY CENTER

Business schools, responding to the growing emphasis on information technology in the corporate realm, are integrating computers into their curricula. Now under construction at Bentley Business College in Waltham, Mass., the Smith Academic Technology Center is planned as a computing focal point for the college, housing offices for the computer and information science faculty, and 31 high-tech classrooms—all served by the college's largest concentration of computer equipment.

The center incorporates some of the latest concepts in business school facilities. A 3,300-square-foot simulated Wall Street trading floor (top right), for example, allows students to experience the kind of technology environment in which they may work after graduation.

The project's biggest challenge was its site, which included a steep hill that separates Bentley's lower residential campus from its upper academic area. Roger Goldstein, FAIA, of Goody Clancy & Associates in Boston, chose to exploit the site's potential by creating a pedestrian passageway up and down the hill. He designed the 78,000-square-foot facility as a four-story cascade of steel-framed volumes that links the academic plaza and the residential area. A broad circulation spine, dubbed as Main Street (right), unifies the building's levels.

Although the social and teaching functions of the space are paramount, Goldstein emphasizes the importance of visible technology as a more subtle teaching tool. For instance, several seminar and conference spaces open directly onto Main Street, providing views via glass walls. And the computer-filled trading room is visible from several vantage points.

The information distribution infrastructure radiates to every student seat and faculty office in the building from two computer rooms stacked above one another on the first and second floors. Two distance-learning rooms with associated rear-projection video systems contain the broadband, or high-capacity, connections necessary for live transmission. Tiered interactive classrooms on three floors have hard-wired network connections routed through the risers to every student workstation.

Student seats in the nontiered classrooms access power and network connections via perimeter raceways and floor-mounted access boxes in the center of each room. Interactive stations are even built into the seating clusters along Main Street to support impromptu collaborations. In total, the system includes more than 1,500 data ports. *J.L.*

Technology concealed

Many of the architects who design high-tech buildings strive to express the digital technology that is within them, making it obvious to occupants and passersby. But, there are cases in which "the facility acts chiefly as a container of technology—a different kind of architectural idea where a deliberate decision has been made to conceal the facility's contents," says Todd S. Phillips, AIA, director of the AIA Center for Advanced Technology Facility Design.

The William Gates Computer Science Building at Stanford University, designed by Robert A. M. Stern Architects of New York City, in association with Fong & Chan Architects in San Francisco, is a good example of technology disguised. The building program called for the most advanced computing and communications technologies to be universally distributed and accessible to faculty and students. The various settings, however, evoke a kind of Cantabrigian collegiality in which even a good old touchtone telephone can seem obtrusive.

The 141,000-square-foot building reflects "a strong need for socialization among members of the computer science faculty," according to Graham Wyatt, AIA. "The clients specifically asked for the design to support collegiality." That's partly because this building pulls together components of the computer science department that were previously spread among seven buildings. Also, the building was meant to respect the campus' Neo-Romanesque context and afford the computer-intensive occupants a place to socialize away from their monitors and keyboards.

The Gates building has a lunchroom (right) where the computer-focused occupants take a break from their high-tech classrooms (above).

The building's buff limestone exterior walls offer no hint of their sophisticated contents. Faculty and graduate student offices surround and conceal a central core of computer labs. Full-blown multimedia distance-learning classrooms and the largest labs are relegated to windowless below-grade space. The classrooms themselves offer up-to-date learning technologies; there's no shortage of monitors, video capabilities, Internet hookups, and teleconferencing facilities.

A clublike library and common areas for informal meetings contribute to the nondigital atmosphere. The top-floor lunch room and adjoining terrace are so successful that they now rival the most posh restaurants of downtown Palo Alto as high-tech meeting and recruiting venues with nary a cable tray or power pole in sight. *J.L.*

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VAN GOGH
MUSEUM

Kisho Kurokawa's new wing for the VAN GOGH MUSEUM makes geometric and subterranean connections to its neighbors.

by Tracy Metz

Throughout his four-decade-long career, Kisho Kurokawa, HON. FAIA, has used abstract forms to create an architecture in which opposites—old and new, East and West—are held together as if in tension. This approach, which he calls "symbiosis," is on full display in his addition to the Van Gogh Museum in Amsterdam, which opened in June.

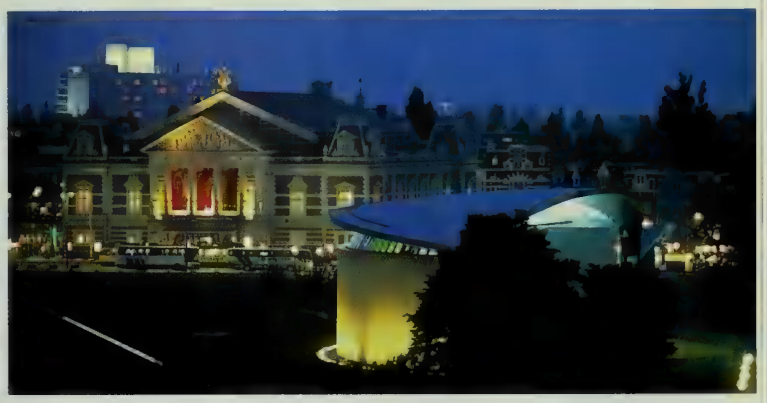
Located on the spacious Museumplein (Museum Square) between the Rijksmuseum (home of Rembrandt's *Nightwatch*) and the Stedelijk Museum of Modern Art, the Van Gogh Museum was designed—or rather, sketched—in 1973 by architect Gerrit Rietveld. Executed posthumously, the building has never been regarded as one of Rietveld's greatest works. But that hasn't kept the crowds away. Whereas the architect had some 60,000 visitors a year in mind when he worked on the project, the museum ended up handling over a million people annually. The strain on the building was evident, as was the need for a major renovation and expansion. When Japanese businessman Yasuo Goto—whose Van Gogh collection includes the famous *Sunflowers* painting—donated $16 million for a new wing in 1991, work on the project got going.

From the beginning, the museum's board of trustees decided that Van Gogh's paintings would remain in the original building, while the new wing would house galleries for changing exhibitions and a room for prints. The old and new buildings would be connected underground, but from the street they would appear to be freestanding structures.

During the design process, Kurokawa found himself caught between a proverbial rock—the orthogonal Rietveld building—and a hard place—the drastic redesign of Museum Square, in progress at the time. (Danish landscape architect Sven-Ingvar Andersson designed the master plan for Museum Square, which includes an addition to the Stedelijk Museum by another internationally renowned architect, Alvaro Siza.) Plans for the square forced Kurokawa to push his 55,000-square-foot new wing closer to the 71,000-square-foot existing museum and to squeeze his original circular design into an elliptical one. As it turned out, the changes strengthened the relationship between Kurokawa's monumental ellipse and Rietveld's composition of squares.

As the Kurokawa wing progressed, so did the renovation of the Rietveld building by Dutch architect Martien van Goor of Greiner and Van Goor. Originally set at just $6 million, the renovation budget grew to $19 million, as it became increasingly obvious that the existing building would look shabby next to the new one. Key elements of van Goor's design include enlarging the old building's main entry and shifting facilities such as a cloakroom, toilets, and a shop to one side, thereby reinstating the stone-paved main hall as the dramatic three-story space it was meant to be. Van Goor also designed a new gridded-glass cube that rises from the southwest corner of the Rietveld building and houses offices and restoration studios.

Kurokawa acknowledged his admiration for Rietveld by keeping the new wing lower than the original building. To do this, he put 70 percent of the floor space underground, including storage areas and workshops hidden under Museum Square. Seemingly simple and clear in



The new wing sits in Museum Square with the Stedelijk Museum in the background (above). It faces Rietveld's 1973 Van Gogh Museum and its new cubic tower (right in photos opposite).

Tracy Metz, RECORD*'s Amsterdam-based correspondent, is a journalist at the Dutch newspaper* NRC Handelsblad *and writes on architecture, urbanism, and landscape.*

Project: *New Wing, Van Gogh Museum Amsterdam, the Netherlands*
Architect: *Kisho Kurokawa Architect & Associates—Kisho Kurokawa, Hon. FAIA, principal; N. Ueki, director; H. Cheriex, managing director; S. Hashimoto, architect; B. Peeters, project architect*
Associate architects: *Bureau Bouwkunde; PKB (project management)*
Engineer: *D3BN (structural)*
Consultants: *G. Bernes (lighting); Van Dorsser Engineers (acoustical)*
General contractor: *J.P. Van Eesteren B.V.*

A sunken pool (right) separates the new wing from the old museum. To enter the new wing, visitors take a curving corridor around the pool. From street level, visitors can look down into the pool (above).

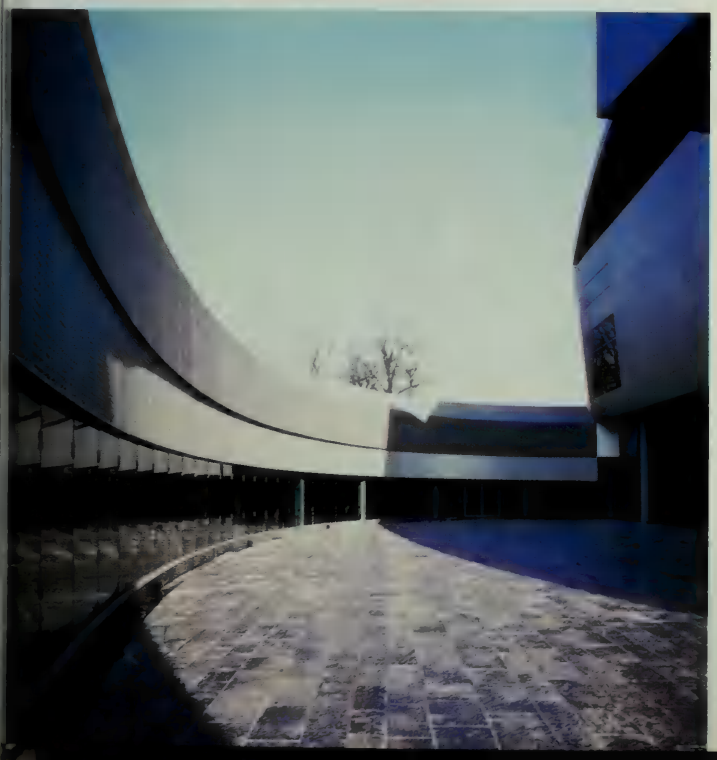
INTERVIEW

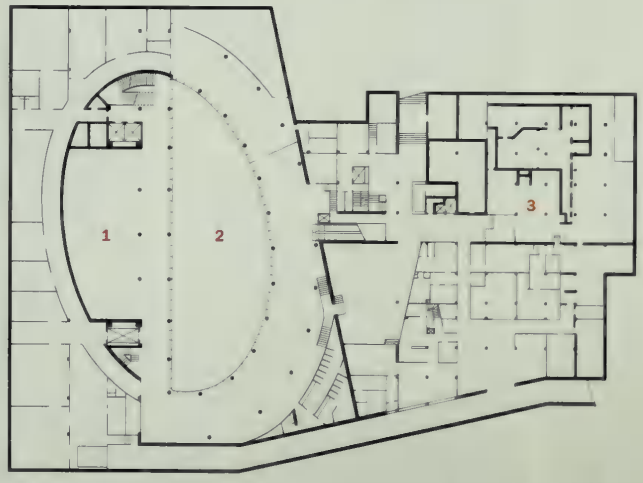
Kisho Kurokawa remains busy around the world. Active projects in his office include a master plan for a new capital of the Central-Asian republic of Kazakhstan; an office for the government of Osaka, Japan; a system of public spaces in Shenzhen, China; the Osaka International Convention Center; and Central Station in Kuala Lumpur, Malaysia. Tracy Metz recently interviewed Kurokawa for ARCHITECTURAL RECORD.

AR: How does the Van Gogh project relate to your previous work?
KK: The idea of identity and abstract symbolism in architecture has been the basic expression of my work for 40 years. For example, at Kuala Lumpur International Airport, I used abstract geometrical forms to evoke Islamic domes, and at the Museum of Modern Art in Wakayama, I adapted traditional symbols from a historical castle roof.
AR: How does the Van Gogh wing relate to the Museumplein?
KK: The new wing shares with Rietveld's building the same spirit of abstraction—his using straight lines, mine using circles and ellipses. [The new wing's] wall facing the main building is subtly off axis, as is the square [print room]. This asymmetry is in the spirit of Japanese culture, which is different from the symmetry of European Neoclassical architecture. ■

TOP FLOOR

FIRST FLOOR

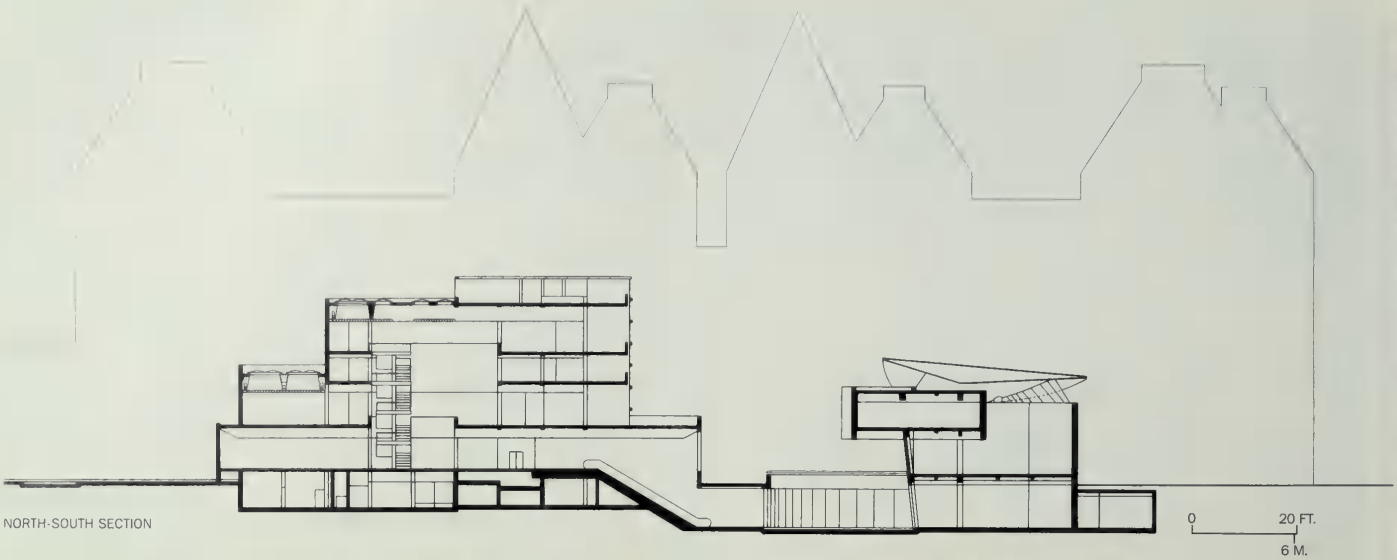




LOWER FLOOR

N 0 20 FT. 6 M.

1. *Exhibition*
2. *Sunken garden*
3. *Existing museum*
4. *Print room*



NORTH-SOUTH SECTION

The print room (left) sits on a third level that overlooks exhibition space (above) on one side and the sunken plaza on the other (section, opposite). The main stair (opposite) is a sculptural element that anchors the southwest quadrant of the museum.

form, Kurokawa's stone and titanium wing is actually all ambivalence and subtle asymmetry: The facade facing the existing building leans slightly forward; the clerestory windows, which play an important role in supporting the roof, lean backward. The aluminum-covered box housing the print room juts at an angle from the titanium facade. And the ellipse of the plan is bisected into two almost equal parts along a line rotated slightly in relation to the axis.

A reflecting pool sunk 15 feet below street level separates the old and new buildings and forms a void that can be seen but not entered. The surface of the pool slopes slightly, keeping the thin layer of water running over the gray flagstones always in motion. Visitors often stand at the rim of this sunken void seeking calm and contemplation, and when the sun reflects off the water, the effect is stunning. For some locals, unfortunately, the association is of wet pavement on a typical rainy Dutch day. The pool is surrounded at street level by a beautiful, cut-stone wall, but the museum has asked the architect to devise some sort of railing after a dog chasing a ball took a flying leap and fell into the hole, breaking its leg.

THE BUILDINGS BY RIETVELD AND KUROKAWA ARE COUNTERPARTS.

Visitors must enter the new wing from the original museum. An escalator or a glass-enclosed elevator takes people from the main floor of Rietveld's building down to a curving corridor whose glass wall affords views of the reflecting pool at its sunken level. The program for the new wing is simple: two floors of gallery space for temporary exhibitions and a third floor for showing prints.

The stair connecting the lower and middle levels is an intriguing sculptural element, painstakingly detailed and tucked neatly against the elliptical form of the new building. Its sharp point pushes forward like a ship's bow, while a grid of small squares on the curving wall creates the illusion of daylight. Next to all this movement and grace, the straight wall of the bank of elevators is somewhat less poetic, less sensual.

Upstairs, the double-height gallery receives daylight reflected off the underbelly of the titanium roof and in through the slanting clerestory windows. But all too often, light sensors register danger and sunscreens automatically zoom shut.

For the sweeping south facade of his pavilion, Kurokawa chose a brownish-gray granite, quarried in Canada and cut in Italy to the exact curve of the ellipse. The roof and the north facade above the pool are clad in titanium, while the print room is dressed in aluminum. The architect's choice of materials reflects his love of the subtle variations of gray and his approach to design. In Kurokawa's architecture, curves and grids, new and old, Japan and Holland establish symbiotic relationships—complementing without denying each other. He rejects the rationalist Western approach to the art of building in favor of an Eastern one in which intermediary zones and unresolved contradictions form an architectural twilight zone. And, no surprise, his favorite time of day for the contemplating the shallow pool is twilight.

The buildings by Rietveld and Kurokawa are counterparts. The monumentality of Rietveld's design reveals itself only on the inside, whereas Kurokawa's has it strongest sculptural presence on the outside. Similarly, the two sides of Kurokawa's structure play off each other: one reflecting and responding to its older neighbor, the other offering a solid stone wall to Museum Square. Connected on one side, the new wing is, for better or worse, closed on the other. ■

Sources

Titanium curtain wall: *TIMET, Combined Engineering*
Aluminum curtain wall: *Alucobond*
Deer-brown Canadian granite: *Dekker Natuursteen*
Glazing: *St-Gobain*
Acoustical ceiling: *Kruppe-Bomatex*
Movable partitions: *Dekker Interieur*
Paints and stains: *Sigma*
Plastic laminate: *Perstorp BV*
Resilient flooring: *ADO*
Interior ambient and downlights: *ERCO*

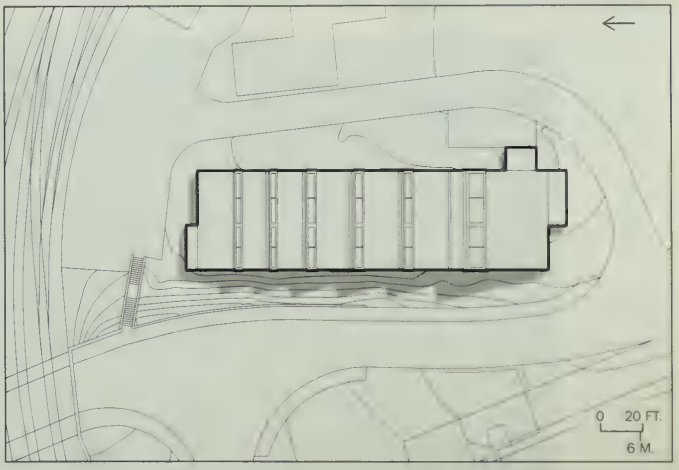
The museum's steel shingles—blasted with glass pearls—have subtle variations that animate the surface (this page and opposite). Sited a few feet from a sweeping curve in the road (opposite), the building has its entry at the rear—its quieter side (this page). A path from the road and parking lot hooks around, past the reception area's broad rectangular window, to the main door (this page).

Gigon/Guyer's steel-shingled **LINER MUSEUM** glimmers against the sloping farmlands of Appenzell, Switzerland.

by Sarah Amelar

With scaly, silvery skin, a long, low body, and a great spiked crest, the Liner Museum in Appenzell, Switzerland, lies like a gentle dragon between railroad tracks and a curving road. "The form is meant to have many different meanings and associations," says its architect, Annette Gigon of Annette Gigon/Mike Guyer Architects in Zurich. Among the influences, she cites the profile of mountain peaks rising behind the museum; the region's farmhouses, entirely clad from ground to roofseam in weathered wooden shingles; the local tradition of forming zig-zag rooflines over adjoining gabled farm sheds; and the area's simple sawtooth factory structures. One might even read trainlike features into this trackside building. For all its evocative qualities, Gigon/Guyer's design also manages to solve practical problems in remarkably simple, yet elegant ways.

The project's beginnings sound like a quaint small-town tale. In a rural village, 60 miles east of Zurich, a retired plumbing manufacturer envisioned creating an entire museum to exhibit the art of his brother-in-law, Carl Walter Liner (1914–97), and his brother-in-law's father, Carl August Liner (1871–1946). For this project, he hired Gigon, who, like the Liners, came from Appenzell. Though the two Carl Liners had been competent painters of portraits and landscapes, they could scarcely command the following of, say, Picasso or van Gogh or many others honored with single-artist museums. The modestly scaled museum (17,000 square feet) would not be expected to transform the entire local economy and tourist trade à la Frank Gehry's Bilbao Guggenheim, but the building itself would



Project: *Liner Museum*
Owner: *Carl Liner Father and Son Foundation*
Architect: *Gigon/Guyer—Annette Gigon and Mike Guyer, principals; Urs Birchmeier and Daniel Kaufmann*
Engineer: *Aerni + Aerni*

Sources
Glazing, built-up roofing, and steel shingles, doors, and windows: *Tuchschmied*
Concrete and masonry: *Gollino Gebr.*
Wooden doors and substructure: *Schreinerei Züricher*

The appearance of the building's scaly wrapping changes with the quality of light (this page). The reception-and-entrance area's large window has a notably different character on the outside, where it projects from the building (below), and on the inside, where it virtually merges the interior and exterior (below opposite). The sizes of the galleries, sawtooth peaks, skylights, and steel shingles gradually diminish as one proceeds northward from the entrance (top and middle, this page and opposite).

SECTION

PLAN

0 20 FT.
6 M.
N

1. *Entry/Reception*
2. *Gallery*
3. *Multimedia*
4. *Reading room*
5. *Coats*
6. *Office*
7. *Kitchen*
8. *Down to art storage*
9. *Up to offices*
10. *Art storage*

Intimately scaled galleries accommodate the Liners' typically small paintings (this page and opposite). With soaring pitched ceilings (left), the rooms also suggest equally suitable settings for larger work. Framing rural views, occasional side windows orient visitors within the landscape (this page, top, and opposite). Unlike Gigon/Guyer's Winterthur museum with its many sawtooth skylights, the Liner has a single skylight per room that creates, says Gigon, a "solemn, chapel-like effect."

clearly have to draw visitors. Increasing the challenge, the client specifically asked for a low-tech structure requiring as little maintenance as possible. The cladding would need to be durable, and the climate-control systems would have to run simply, on a limited operating budget.

With high ambitions for accommodating innovative contemporary art in the future, as well as the current father-and-son collection, Gigon/Guyer designed rooms they describe as "more general than specific . . . quiet spaces that neither exaggerate nor compete with the works of art." Thus, they sought a spatial flexibility that would allow—even

THE QUIET SPACES NEITHER "EXAGGERATE NOR COMPETE WITH THE ART."

inspire—the museum's overseers to expand the scope of the original program. From the reception area, the architects established a linear sequence of 10 intimately scaled galleries in side-by-side pairs. Illuminated by reflected rays filtered evenly through skylights, these concrete-floored, white-walled rooms rise like light chimneys to pitched ceilings that generate much of the building's exterior configuration.

Wrapped monolithically in overlapping scales of stainless steel, the outside form belies the interior separations. The metal skin—blasted with glass pearls—has an animated, slightly cloudy quality that changes with the light. In selecting cladding, Gigon/Guyer ruled out masonry for its rarity in Appenzeller buildings, wood for its ephemeral qualities, and corrugated metal for its overly industrial look. To avoid colored reflections that might interfere with viewing art, they eschewed copper in favor of the more neutral-colored stainless steel. Self-maintaining, their nonrusting shingles are attached on only two edges to the waterproofed wooden substructure, thus permitting the flow of air and drainage of rainwater.

The architects accentuated the building's clean lines and formal purity not only with continuous sheathing, but also with their interior detailing. To keep ductwork from interfering with the integrity of the sawtooth ceiling, they created two thick interior partitions—one splitting the paired rooms and the other running perpendicular to it—that cleverly conceal climate-control ducts and electrical conduits, as well as drains for the roof troughs. Even the rarely needed overhead lights are hidden from view, discretely tucked into the skylight forms. With massive exterior walls, the architects minimized the impact of climatic changes: no cooling is necessary, just humidity control. The skylights are oriented to reduce solar heat gain and are operable, occasionally bringing fresh air into crowded galleries and automatically releasing smoke in case of fire.

Transcending the building's most straightforward qualities, a level of refinement gradually reveals itself. The galleries, for example, may initially appear alike, but they actually vary in size and natural illumination, becoming smaller and dimmer—adapting for such light-sensitive work as drawings—as one proceeds from the entrance. The experience becomes one of tranquility and subtle change, not sameness. Some rooms have side windows, framing paintinglike views that orient visitors within the landscape. And as the spaces diminish in size, so do the roof peaks and proportions of the scales over them, like the skin of a fish or serpent.

So far, the museum, which permits visitors only four days a week, has focused primarily on the Liner collection—and it's not clear the trustees will ever take the leap to make it a venue for contemporary art. But as a tribute in part to the architects, some 20,000 visitors have streamed in since the Liner Museum opened its shimmering doors a year ago. The place has, as Gigon puts it, become a small "pilgrimage site" in the countryside. ■

PORTFOLIO: Four visitor centers subtly interpret the landscape, inviting park patrons to become one with the wild.

by Jessica Joan Dheere

"We're here!" Unable to contain the urge to traipse into the wild any longer, the new arrivals release the latches and slam the car doors. Leftover crumbs from an en-route snack hit the parking-lot asphalt as the adventurers stretch their legs and wonder, "We're where?" In unison, they scan the horizon, halting on the one familiar snag in the landscape that must hold the answer: the visitor center.

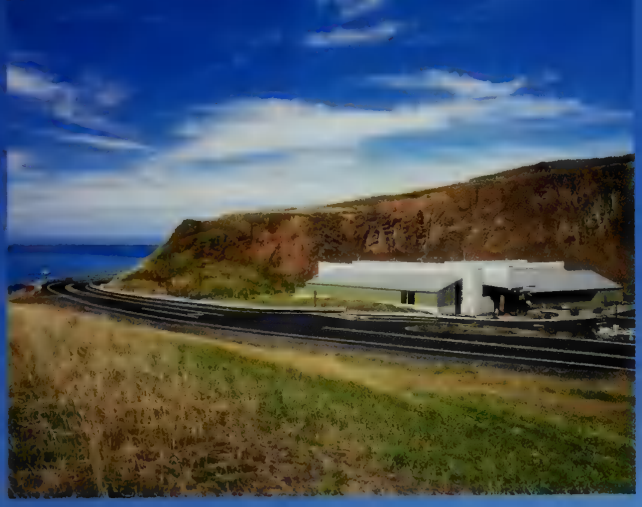
These days, it's automatic to look for the visitor center before looking for the woods, but less than 50 years ago, not even the term *visitor center,* much less the building type, existed. That all changed in 1956 when the National Park Service (NPS) initiated Mission 66, a billion-dollar, 10-year program that mandated hundreds of new park facilities, including about 100 visitor centers.

The Mission 66 centers were more than rest stops and bathrooms; they provided much needed places to teach park users to put out their fires, to pack out their trash, and not to carve their initials in tree trunks. To attract attention to the program and the parks, the NPS also prescribed that the architecture of the centers stand apart from the landscape with modern, inorganic forms, such as those explored by Mitchell/Giurgola at Kitty Hawk in North Carolina and Richard Neutra at Gettysburg, Pa. Some visitor centers became icons, evolving into destinations themselves.

The four projects that follow reconsider the destination notion and cast the visitor center—now often called an *interpretive center*—as a gateway, not a terminus, on the visitor's journey from the civilized world to the untamed one. To aid this transition, the architects brought inside typically exterior elements—a porch, a stretch of hiking path, bird-watching perches, and stones and timbers culled from the land—to boost visitors' understanding of the environment before ushering them, almost without pause, to the alien terrain over the threshold. And once there, they will stand ready, at a trailhead or on an observation deck, anointed for the transcendental encounter they have sought from the instant the car turned into the parking lot.

YAQUINA HEAD GIVES VISITORS THE KEY TO A KINGDOM BY THE SEA

Initially designed to crest a cliff high above the beach and a historic lighthouse near Newport, Ore., the Yaquina Head Interpretive Center was relocated—in response to local residents' objections and with construction documents 75 percent complete—to a reclaimed rock quarry excavated into the cliff's side. With limited funds and little time for redesign, the building bears puzzling remnants intended for its original location. Windows meant to draw visitors outside onto a grand porch with Pacific views, for example, now face a 100-foot-tall basalt cliff.



A late change in site forced the Yaquina Head interpretive center to move from a prominent position with ocean views across the road to a more modest spot at the base of a 100-foot basalt cliff.

While the architects, The Miller/Hull Partnership, of Seattle, still rue the change in site, their design for Yaquina Head proves remarkably resilient thanks, in part, to its straightforward scheme. Two rectangular volumes—one containing the exhibition space and the other administrative functions—sit at a slight angle to each other. In the space between, a lobby gradually opens up from the main entrance back toward the porch leading to the trailhead.

The use of concrete also contributed to the building's adaptability. Its sturdiness endures the 80-mile-per-hour winds known to blow on the headland, and, says design lead Robert Hull, FAIA, "concrete expresses a sense of longevity—almost of geologic time—that fits with the cliffs and shores of the site."

Similarly, once inside, visitors feel as if they still have one foot in the great outdoors owing to the exposed aggregate floors and poured-in-place concrete walls. And even the seemingly awkward view of the cliff—observed across the double-height porch—finds a dual purpose in the scheme as invitation to the trail leading to the ocean and introduction to the quarry's history as the source of stone for legendary Highway 101.

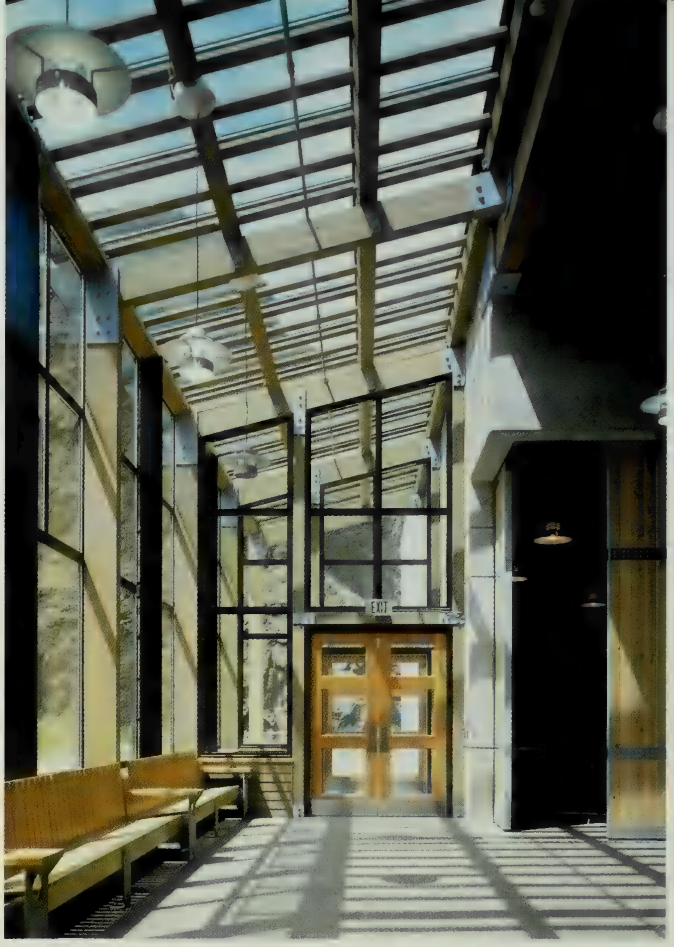
Adjacent to the porch, a full-scale replica of the lighthouse's lantern signals the location of the interpretive exhibits designed by Aldrich Pears Associates, of Vancouver. In contrast to the clearly articulated structure of the lobby, the 6,000-square-foot black box that

houses the exhibits is an abstract and theatrically lit space that curves slightly and uses softly flickering lighting to add depth to a life-size mural of a gray whale and her calf. "Our goal was to balance content and visual effect," says Ronald Pears, "just as we try to balance the indoor exhibits with the real experience of the park." Outdoor exhibits, also created by Aldrich Pears, include universally accessible, man-made tidal pools carved from the quarry, which teem with sea stars, anemones, and crabs.

The success of Yaquina Head lies not only in its resilience, but also in the way in which Miller/Hull has imbued a relatively modest project with a strong visual presence by playing with scale. Oversized two-by-six-inch battens give the vertical wood siding a large-grain texture against the heavy-timber and concrete construction, while exaggerated roof scuppers create a counterpoint to the taut raised-seam metal roof and closely cropped roof rafters. A continuous vertical reveal at each corner prevents the large concrete boxes from appearing staid.

Overall, the architectural expression is rugged but never heavy handed, giving Yaquina Head a batten-down-the-hatches quality befitting its stormy ocean site.
Sheri Olson, AIA

Project: *Yaquina Head Outstanding Natural Area Interpretive Center*
Owner: *Bureau of Land Management*
Architect: *The Miller/Hull Partnership*
Interpretive design: *Aldrich Pears*



The impressively scaled lobby (left) anticipates the grandeur of the cliffs and ocean that await visitors. The glazed porch (above) leads to the main trail. The black-box exhibit area (right) rolls along like waves in the sea.

1. *Lobby*
2. *Interpretive*
3. *Giftshop*
4. *Multiuse*
5. *Administrative*

WITH A WHISPER, TRAPPS GATEWAY COAXES HIKERS TO HIT THE TRAIL

"We were the only architects who promised not to build a building," says Lee H. Skolnick, AIA, about Trapps Gateway, the visitor center his New York City firm designed for Mohonk Preserve in upstate New York. Instead, the architects built what Skolnick calls "an invitation to the land" that summons hikers and climbers to preview what they'll soon experience firsthand.

The architects connected the building to the preserve in several ways. In conjunction with the landscape architect, they selected trees on the heavily wooded preserve to fell for the center's 11 major columns. Similarly, masons culled stones from the land for the facade, structural retaining walls, and built-in interior furniture. And much of the 9,200-square-foot building sits below grade to minimize the impact of what could be an imposing, unnatural mass.

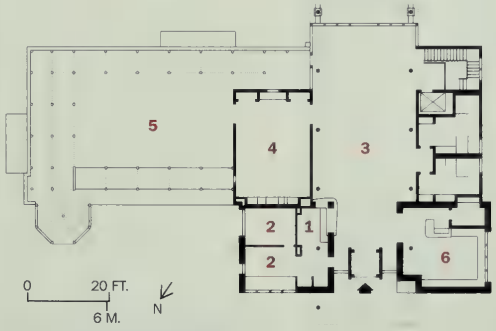
Inside, a two-story vista opposite the entrance draws visitors—as down the nave of a cathedral, says Skolnick—past a large topographical model of the preserve and a "storyline" of didactic exhibits, both of which the firm designed.

Downstairs, a geothermal heating and cooling system uses the earth's underground temperature to maintain a constant climate without using fossil fuels. Originally intended to meet sustainability requirements, the geothermal system, which visitors can observe through glass, is now part of the educational program.

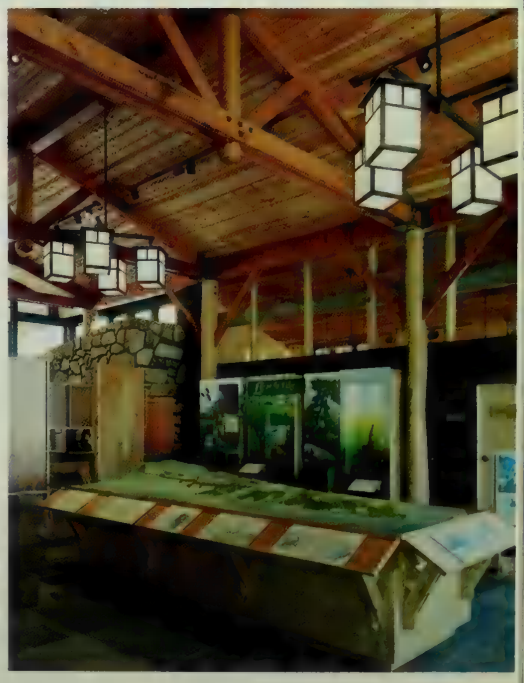
The interplay between the architecture and the interpretive exhibits, say the architects, reinforces the visitor center as a gateway and transforms visitors' perceptions of the land while inspiring them to find their place in it. *J.J.D.*

Project: *Trapps Gateway Center*
Owner: *Mohonk Preserve*
Architect: *Lee H. Skolnick Architecture & Design Partnership—Lee H. Skolnick, AIA, principal, Paul S. Alter, principal, Jo Ann Secor, director of museum services*
Landscape: *Hudson & Pacific Designs*

For the entrance (above), native stone and timbers, as well as the hidden lower level, reinforce the architect's intent that the building blend with the site. A two-story window (left) and a topographical model (below) draw visitors through the building.



1. *Reception*
2. *Office*
3. *Exhibit/Orientation*
4. *Main meeting room*
5. *Outdoor deck*
6. *Gift shop*



A CONCRETE OASIS COOLLY COMES TO NATURE'S AID

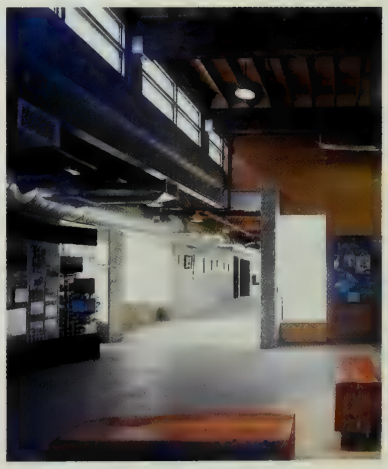
It's not just the high-desert heat rising that, from a distance, blurs the edges of the Antelope Island Visitor Center into the contour of Ladyfinger Ridge. Designed by Edwards & Daniels Architects, of Salt Lake City, the 5,250-square-foot building, sited on a scar created by a dynamite blast, actually heals the profile of the northern tip of this 18-mile-long island in the southeast corner of Utah's Great Salt Lake.

Similarly, the rough, gray, cast-in-place concrete camouflages the center in what project architect Peggy McDonough-Jan, AIA, compares to a moonscape. And the walls—higher on one end than on the other—appear shifted by a subterranean force, suggesting timeless geology at work, not 20th-century construction. Reclaimed timber framing, however, nods to the island's prior human settlements.

A walkway that starts at the parking lot takes visitors inside. As they move along it, they get glimpses of the vistas they came to see and can branch off into exhibit and multiuse areas. Eventually, the path takes visitors back outdoors to an overlook where they can appreciate endless views and contemplate a seemingly beginningless history. *J.J.D.*

Project: *Antelope Island State Park Visitor Center*
Owner: *State of Utah*
Architect: *Edwards & Daniels Architects, Inc.—Burke Cartwright, principal-in-charge, Peggy McDonough-Jan, AIA, project architect, Elaine Fung, Michael Pusey*
Consultants: *Landscape Design Inc.—Jan Striefel (landscape); Consortium West (interpretive)*

The building completes the profile of Ladyfinger Ridge (top). The gray, cast-in-place concrete walls blend well with the island's indigenous stone (left). Light shines in through clerestories, illuminating exhibits and orienting visitors (below).



1. *Walkway from parking*
2. *Bookstore*
3. *Exhibit*
4. *Office*
5. *Resource*
6. *Multiuse*
7. *Walkway to overlook*

N 0 20 FT. 6 M.

IN MANHATTAN'S BACKYARD, NATURE LOVERS FIND A REFUGE AS PRIVATE AND COZY AS THE BACK PORCH

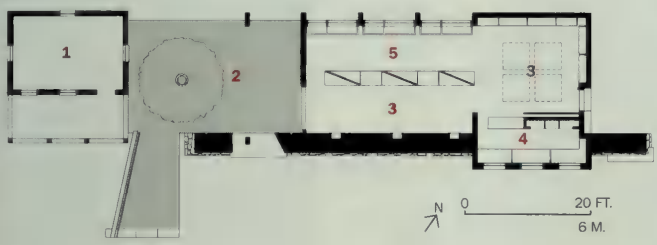
The Greenbrook Nature Sanctuary Visitor's Center, designed by New York City firm Thanhauser & Esterson, provides refuge for bird-watchers much as the 180-acre preserve creates a safe harbor for wild things. Just six miles north of Manhattan on the New Jersey Palisades in Alpine, N.J., the 1,000-square-foot visitor center, accessed by a deck that joins the new construction to an existing, small gable-roofed office, was envisioned by the architects as "a 'built' trail in the woods."

Approaching from the parking lot, visitors encounter the building's primary horizontal component, a wall built from stone found on-site. The wall—intended to be a reminder of the Palisades' 300-foot cliffs—interrupts the view into the forest and marks the boundary between the built and natural environments.

A ramp carries visitors up the deck, and a right turn takes them to the entrance (a left turn leads to the old building) on the other side of the wall. Inside, an abundance of maple in both ceiling panels and removable exhibit panels, coupled with daylight admitted by skylights, give the interpretive area a warm glow.

A series of windows—each with a stool and a pair of binoculars—lines the rear wall of the building and faces a bird meadow, creating observation niches and imbuing the space with the feel of another man-made escape for sitting, watching, and wondering: the porch.

Project: *Greenbrook Nature Sanctuary Visitor's Center*
Owner: *Palisades Nature Association*
Architect: *Thanhauser & Esterson—Jack Esterson, Charles Thanhauser, principals-in-charge; Ken Levenson, project architect*
Interpretive: *Stephen Saitas (design), Katherine Grover (text)*



1. *Existing office*
2. *New deck*
3. *Exhibit*
4. *Research office*
5. *Bird-watching niches*

The new visitor center is connected to an existing office (left in photo left) by a new deck, whose ramp leads to the main entrance (top) behind the horizontal stone wall. Inside, exhibits occupy a linear space, and bird-watching niches line the rear wall (above).

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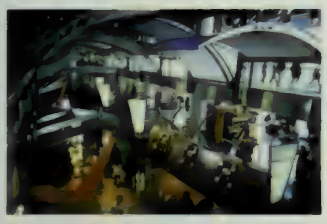
CIRCLE 65 ON INQUIRY CARD

ENTERTAINMENT RETAIL

Reinventing the Mall

WITH SOME SHOPPERS TIRING OF THE SAME OLD SETTINGS AND MANY TURNING TO THE INTERNET, RETAIL DEVELOPERS MUST GIVE PEOPLE A REASON TO COME TO THE MALL.

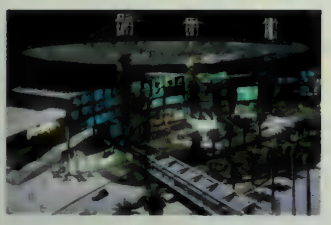
by Susan Doubilet



1

San Francisco

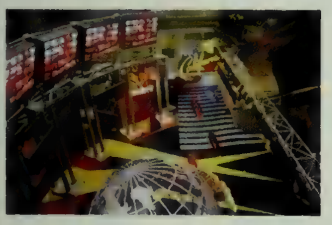
SMWM and Gary E. Handel teamed up to design Metreon, an urban entertainment center that takes technology as its theme.



2

Las Vegas

When built in a few years, this expanded shopping mall by Orne + Associates will feature a show-stopping public plaza on the famous Strip.



3

Beijing

An outpost of Hollywood vibe, designed by Hodgetts + Fung for Universal Studios, sits within a glitzy Chinese shopping mall.

4

San Diego

A 1960s shopping center gets a makeover by Altoon + Porter that involved a cineplex, new restaurants, and some structural gymnastics.

Driven by trends with increasingly short life cycles, the retail industry is betting that the addition of entertainment to the traditional mix of shopping components will serve as a shot in the arm. Also called "experience," "lifestyle," or "themed" shopping, entertainment retail incorporates cinemas, full-service restaurants, and high-tech video arcades in new and renovated centers. The goal is to draw a wider range of people than conventional retail and to entice them to spend more time and money on each visit. And developers are adding these new complexes to both downtown and suburban locations.

While 1998 was a record year for retail construction, the forecast for the next few years is less rosy. According to the F.W. Dodge division of the McGraw-Hill Companies, store construction hit a new high of 277 million square feet last year, thanks to a booming residential market that has fed demand for new and expanded shopping centers. But Dodge predicts that store construction will recede by 5 percent this year and will drop to 195 million square feet by 2001. To fight the coming downturn, the industry is rolling out new formats, such as entertainment-enriched shopping centers, says Robert Murray, vice president and director of construction forecasting at Dodge.

The retail industry is currently polarized, explains Stan Laegreid, a principal at Callison Architecture in Seattle. At one end, the warehouse store offers convenience and low prices; at the other, the experience shopping destination supplies a place where people can go for the fun of it. Fearing that shoppers will tire of the usual anchor-department-store-and-boutique format and wary that more and more shoppers will frequent the warehouse store or just stay home and purchase via the Internet, mall developers are adding places where people can come to be entertained—such as full-service restaurants (not just food courts), cinemas, and themed attractions.

Enticing younger and older shoppers to come to the mall

And with a strong U.S. economy, the strategy is generally working. Industry experts say the average mall stay is four hours, compared to the 60- to 90-minute stay in pre-entertainment malls. Furthermore, in addition to the traditional mall shoppers—women in their 20s through middle age—younger and older visitors are being drawn to the new

Susan Doubilet's most recent book is European House Now *(Universe/Rizzoli). She is also the coauthor of* Private Architecture *and* American House Now.

Desert Passage, designed by RTKL for the Aladdin Hotel in Las Vegas, will be a 462,000-square-foot complex with themes as thick as thieves. Shoppers will go from a Treasure House to a Music Quarter to a Dome of the Spirits.

centers. The lucrative teenage-plus group, including formerly mall-resistant young men aged 18 to 25 years, has a new hang-out. And the over-50 crowd, with lots of money and leisure time, has a place to enjoy a meal and a movie.

Entertainment retail is certainly not an entirely new phenomenon. The January issue of *Entertaining Places*, a quarterly supplement to the magazine *Shopping Center World*, lists Riverwalk in San Antonio, dating from 1968, as the first of 12 milestones of the trend. The 1976 Faneuil Hall development in Boston, like Riverwalk an extension of its city's downtown, makes the list. So do Horton Plaza in San Diego (1985); CocoWalk in Miami (1990); the Mall of America in Minneapolis (1992); CityWalk at Universal City, Calif., (1993); and Navy Pier in Chicago (1994). Each introduced "at least one element that became a central component of entertainment retail," such as the cineplex, the festival marketplace, and the open-air mall, states the article. Much of these projects' success stems from designs that were specific to their locations, not generic.

Mixing high- and low-tech attractions to reach a broad market

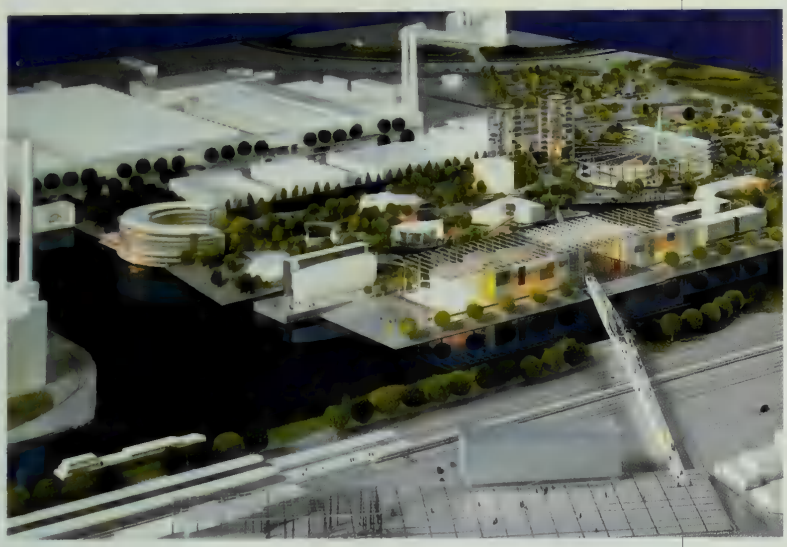
In the current generation of entertainment retail projects, a cineplex often acts as a mall anchor, sometimes replacing a department store in an existing shopping center. Gary Karl, retail vice president of Westfield America, reports that his company's shopping center in Enfield, Conn., experienced a 7 to 8 percent increase in sales with the addition of a cineplex. The Irvine Spectrum Center in southern California, for example, is adding 10 cinemas to its current 21, betting heavily on Hollywood's appeal. New forms of software-driven entertainment are appearing, too. High-tech attractions such as Gameworks, a joint venture of Universal Studio, Dreamworks Studio, and Sega, mix virtual and video games along with family restaurants and bars to grab the interest of a broad range of age groups. Disney is competing in the field with its new Disneyquest urban entertainment centers in Orlando, Philadelphia, and Chicago. Sony's Metreon in San Francisco blends retail with cinemas and themed attractions of both the high- and low-tech variety. Robert Hale, vice president of design and planning for Universal Studios, points out that new kinds of attractions prevent a retail center from getting stale.

But David Ashen, design director at the image management and strategic design firm Desgrippes Gobe & Associates in New York, cautions that it is not sufficient to just add videos or even video games to the retail experience to make it entertaining. And it's important, he says, for malls to appeal to a wide range of senses—not just those needed to manipulate a joystick. To create this kind of appeal, architects, together with interior, graphic, and industrial designers; marketing executives; and developers, are adopting methods generally used in producing motion pictures. For example, designers at ID8, a division of RTKL specializing in entertainment, often begin a project by scripting a narrative—either a fictional one or one that borrows from a local culture—to serve as a design framework. They then develop storyboards that guide every aspect of the architecture as well as the retail techniques and the marketing.

DISNEY, UNIVERSAL, AND SEGA ARE ROLLING OUT RETAIL EXPERIMENTS.

Increasingly, malls are being built or refurbished, with extensive open-air plazas (the reverse of the 1970s trend to enclose earlier strip malls.) This helps create what Eddie Wang, president of the Jerde Partnership International, calls a "town center" atmosphere, offering people of all ages a place to socialize. At the

The Jerde Partnership envisions Namba in Osaka, Japan, as an "urban magnet," offering shopping and entertainment set within a landscaped canyon that rises eight stories from one end to the other.



Even Volkswagen has caught the entertainment bug. Its Autostadt in Wolfsburg, Germany, designed by Henn Architekten, will open next year with a museum and brand pavilions.

Avenue of the Peninsula in Palos Verdes, Wang's firm is adding a cinema and removing the roof of a prototypical 1970s enclosed shopping mall, an older Jerde design.

Paul Jacobs, a vice president at RTKL, says that retail development is echoing the population's move back to the city. His firm's $100 million "classic Main Street" project under construction in the Brea area of Los Angeles will contain civic spaces, a 22-screen cineplex, 200,000 square feet of retail, and over 100 residential units of varying types, including live/work lofts above the shops.

Turning shopping into "experience retailing"

Callison's Stan Leagreid confirms that downtown is an important location for what he calls "experience retailing." "Shoppers are looking for something more meaningful than the anonymous mall," he says. And the answer, he proposes, is not necessarily in large-scale redevelopment, but in "coretailing." Complementary lifestyle retailers—Crate and Barrel,

ENTERTAINMENT RETAIL WORKS BEST WHEN TIED TO A SPECIFIC CONTEXT.

Restoration Hardware, Banana Republic, and the like—can bundle themselves together to form a district within a downtown, supplemented by a cinema, restaurants, a gourmet grocery, a drycleaner, and professional offices. Callison is currently designing a coretail prototype that will bundle Wells Fargo cash machines with Starbucks coffee shops.

Entertainment retail environments are being used, as well, to promote brand names. In Wolfsburg, Germany, Volkswagen has established an "Auto City" overlooking its car production plant. The 75-acre site, planned by Henn Architects and Engineers of Munich, will include a customer center, conference center, auto museum, and luxury hotel, along with individual pavilions for each of the company's car brands.

One of the most elaborate of themed environments has been designed by RTKL for that most flamboyant of American cities, Las Vegas, where entertainment now exceeds gambling as the prime tourist attraction. Desert Passage, a 462,000-square-foot entertainment and retail complex, is a feature of the new Aladdin Hotel & Casino. Here entertainment and retail merge into a seamless fantasyland, taking visitors along a winding path through recreated trade routes of yore, from southern Spain and Northern Africa to a bejeweled street in India. Exotic tiles, ironwork, and glass will create an "authentic" experience, explains a representative of developer TrizecHahn, who promises that strolling entertainers "will never let the visitor remain an innocent bystander."

Exporting the concept around the world

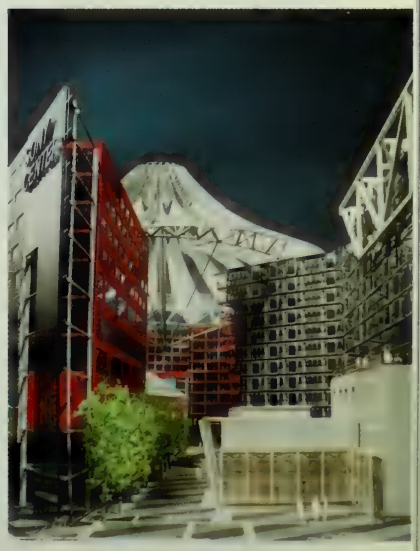
American architecture and development firms are involved in scores of entertainment retail complexes throughout the world, notably across Europe and in the Far East. To mention just a few: Orne + Associates has been invited to design a film-based complex in a western European nation. RTKL has designed the 500,000-square-foot Trocadero development in London's Piccadilly Circus; a prototype Warner Brothers entertainment retail complex for international locations; and an entertainment retail project in Yokohama, Japan, which takes the form of a fictitious New England fishing village. Universal Studios is reapplying its CityWalk-style retail development on its 2,000-acre Port Aventura theme park/resort development in Spain. Sony is developing entertainment complexes in Tokyo and on the Potsdamer Platz in Berlin, the latter an aggressive design by the German-born Chicago architect Helmut Jahn, FAIA. And the list goes on. Segments of the world seem to be begging for American style retail and entertainment expertise, and Americans are eager to comply.

What, then, are the limits to this trend? Richard Orne says, "Entertainment is seen as a panacea, but it can only work if it's built as part of its specific context." He emphasizes the inclusion of local shops as well as national chains. Furthermore, Orne urges, "Connections have to be made with public transportation."

Since entertainment retail is the merger of two intrinsically trendy industries, what will happen to these places when the trend wanes? Matt Valley, editor of *Shopping Center World,* repeats a tongue-in-cheek comment heard at a retail conference: "They'll become the world's biggest racquetball courts."

In fact, sports may be the next growth area for entertainment retail, following the example of the Chelsea Piers complex in Manhattan, which offers a couple of skating rinks, a golf range, and extensive gymnasium facilities along with restaurants and some shopping.

As many retail developers chase the bright lights of entertainment, some questions remain unanswered. For example, will the proliferation of national chains in these establishments promote a certain sameness and bleed them of their excitement? And despite claims of adding vitality to downtowns, will these projects take away business from older, smaller retailers and act only as isolated islands of activity? ■



Murphy/Jahn's Sony Center Berlin will open next June and will feature a pedestrian street leading to a tent-roofed, outdoor forum.

1 Metreon San Francisco, California

WHAT'S A SHOPPING AND ENTERTAINMENT CENTER DOING IN AN ARTS COMPLEX? KEEPING THE PLACE BUSY AROUND THE CLOCK.

by Clifford A. Pearson

Project: *Metreon, San Francisco*
Owner: *Millennium/WDG Ventures*
Collaborating architects: *SMWM/Gary E. Handel + Associates—Cathy Simon, FAIA, Gary Handel, AIA, principals-in-charge; Linda Sobuta, AIA, Deborah Finkelstein, Wahid Iskanderzada, project managers; Alyosha Verzhbinsky, AIA, project architect; Glenn Rescalvo, AIA, senior designer; Bill Katz, Doug Hoffelt, AIA, Alan Burkett, Louise Louie, George Duncan, AIA, Shannon Kaye, Meg Horl, David Kilpatrick, Connie Maxwell, David Miller, Jasen Bohlander, Joyce Hwang, Greg Tuck, Paul Haslhofer, project team*
Interior designers: *Sony Development; Gensler (gateway, cinemas, Where the Wild Things Are)*
Engineer: *DeSimone Consulting Engineers (structural)*
Contractors: *Bovis (core, shell, and theaters); Dinwiddie Construction (tenant improvements)*

Construction cost: *$200 million*
Scope of work: *Design a new 350,000-square-foot urban entertainment center*
Key components: *Cineplex, IMAX theater, stores, themed attractions*

Sources
Metal cladding: *Alucobond*
EIFS: *Dryvit*
Tempered glazing, skylights: *Viracon*
Tower sign glass: *Saflex (Opticolor)*
Exterior lighting: *Poulsen, Irideon, Lithonia Lighting*

Two of the driving forces behind the 350,000-square-foot Metreon complex have little or no background in retail—one is a redevelopment agency; the other makes electronic appliances. So it's not surprising that the mall they built one block south of Market Street in San Francisco breaks from the shopping-as-usual approach to retail development.

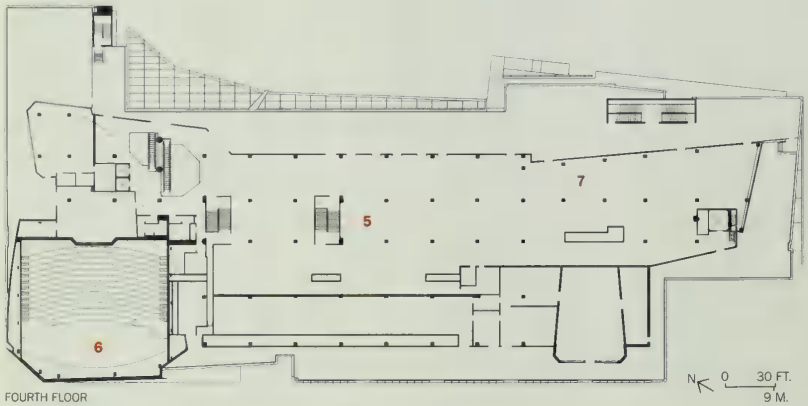
The San Francisco Redevelopment Agency (SFRA) and Sony Corporation of America, in conjunction with developer Millennium Partners, have done more than just added a multiplex cinema and some entertainment attractions to a typical mall. At Metreon, there are no department-stores-cum-anchor-tenants; the food court has been replaced by a collection of five local restaurants where you can take business clients without having to apologize; and the separation of one store from another is purposely blurred to create a seamless environment.

Part of the Yerba Buena Center for the Arts, Metreon offers a dose of popular culture to an established complex that already included a theater designed by James Polshek, FAIA; an art gallery and exhibition hall by Fumihiko Maki; a central esplanade garden by Mitchell/Giurgola Architects; and a children's museum by Adèle Naudé Santos. Mario Botta's Museum of Modern

1. *Metreon*
2. *Marriott Hotel*
3. *Esplanade*
4. *Art gallery (Maki)*
5. *SF MoMA (Botta)*
6. *Theater (Polshek)*
7. *Moscone Center*

An IMAX theater (left) acts as an icon for the project. Glass panels break up the long Fourth Street facade (opposite bottom); at night, colored light is projected on them. The project faces Yerba Buena Gardens (below).

One Metreon facade addresses Yerba Buena Gardens with a four-story crystalline element that the architects nicknamed "the blade" (opposite and this page).



FOURTH FLOOR

FIRST FLOOR

1. *Discovery Channel Store*
2. *PlayStation Store*
3. *Gateway*
4. *Sony Style Store*
5. *Restaurant*
6. *IMAX theater*
7. *Themed attraction*

Art is also nearby, and, when they're built, Daniel Libeskind's Jewish Museum and Ricardo Legorreta's Mexican Museum will be also.

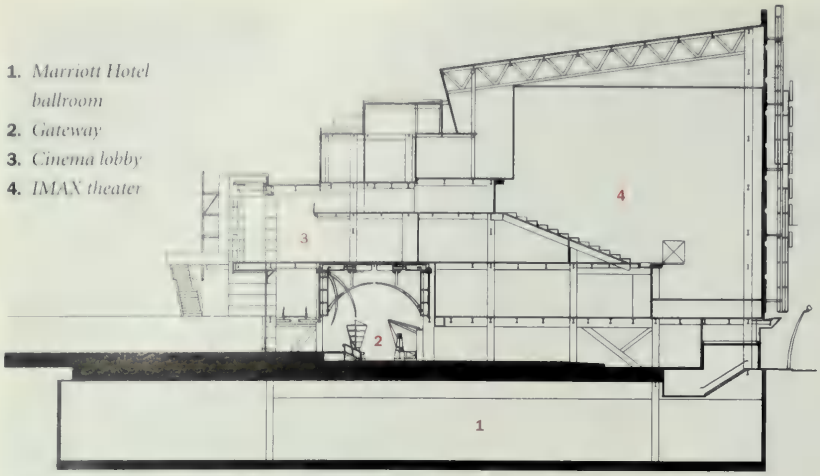
While a building with shopping may not seem to fit in a center for the arts, Metreon plays a key role at Yerba Buena, attracting a broad range of visitors, staying open in the evening, and providing subsidies to its nonprofit neighbors.

Getting the right kind of commercial and entertainment ventures for the project, though, proved to be a difficult task. Even after the New York-based developer Millennium Partners and its San Francisco arm, WDG Ventures, joined the team and brought Sony along with them, the program for the site at the corner of Mission and Fourth streets was still in flux. Millennium had worked with Sony on the successful Lincoln Square complex in New York City, which includes a Sony multiplex and IMAX theater, along with a health club and a residential high-rise.

Finding a theme for Sony

Instead of creating a mall with a few anchor tenants and lots of generic

With columns set 10 feet on center and glass panes measuring 15 by 5 feet, the east-facing curtain wall offers great views of the gardens and surrounding area. A dramatic stair provides access to cinemas, attractions, and a fourth-floor roof terrace.



EAST-WEST SECTION

The Gateway (below) is the two-story heart of the project: a central space whose design expresses Sony's theme of technology and convenience. "We think of the Gateway as our Web page," says Marlene Saritzky, director of communications and marketing for Metreon. Winglike canopies slowly move, adding a dynamic quality to the space.

The IMAX theater is essentially a cube 100 feet in each direction (far left). The Way Things Work (left) is one of three themed attractions. The Airtight Garage (below) is a high-tech video arcade based on the drawings of the French comic-book author known as Moebius.

leasable space, Millennium and Sony approached the project as if it were a Hollywood production—with an overall concept integral to all its parts. Reflecting its new identity as not just a manufacturer but also a producer and distributor of films, music, and computer games, Sony programmed Metreon around a theme of technology and its role in everyday life. Such a focus creates a home for both a Sony Style store and the first retail outlet devoted solely to the company's PlayStation computer games.

"Today Sony is a marriage of hardware and software," explains Herbert Lembcke, FAIA, vice president of development for Metreon.

Creating special attractions

The company also attracted or helped develop tenants that fit this theme. So Metreon includes a Discovery Channel Store and the first-ever Microsoft brand store. For special attractions that wouldn't be found anywhere else, Sony worked with three authors to turn their books into three-dimensional, amusement-park-like environments. The results are walk-through, interactive versions of Maurice Sendak's children's story *Where The Wild Things Are* and David Macaulay's *The Way Things Work*, as well as a video- and computer-game arcade based on the work of Jean Giraud, a French comic-book illustrator who uses the pen name Moebius.

Each attraction has a separate admission charge, while entry to the rest of the project is free. Each attraction also has its own store and, in the case of the Sendak feature, its own restaurant serving kid-friendly food.

Making the 500-foot-long, four-story building work urbanistically was a challenge for the two architecture firms that collaborated on Metreon: Simon Martin-Vegue Winkelstein Moris (SMWM) and Gary E. Handel + Associates. But in some ways its size is an asset, says Gary Handel, AIA, because it clearly defines the western edge of Yerba Buena Gardens, something that the smaller buildings on the east side (by Maki and Polshek) don't do. Metreon also does a better job of addressing the street, bringing its bulk right up to the sidewalk rather than sitting back from the urban fray. One disappointing note, though, is the lack of direct access from sidewalks to shops; like more traditional malls, Metreon requires visitors to enter stores from common space inside the building.

While the project presents a hard edge to the street, it offers a softer, more transparent face to the gardens. Plazas and terraces on three different levels, along with a four-story-high glazed space that the architects nicknamed "the blade," offer a variety of places—both indoors and out—where people can enjoy views of the entire Yerba Buena area. "Like much of our work, Metreon deals with movement and transparency through spaces and with site-specific design," states Cathy Simon, FAIA, principal-in-charge for SMWM.

A tricky place to build

As if creating a new kind of urban entertainment center weren't enough, the architects had to build part of it on top of the Moscone Center roof and another part of it above the Marriott Hotel's underground ballroom. Huge girders 90 feet long and 10 feet deep span the ballroom, while 12 steel moment frames cross the building from east to west. Accommodating exits for Moscone Center and a huge exhaust vent from the Marriott kitchen made the job even trickier.

Before Metreon opened in June, some people wondered if an urban entertainment center could work in a city like San Francisco, where "mall" is a dirty word. Initial attendance figures indicate it can; 20,000 people a day have been visiting the place, nearly double what had been projected. ■

2 Fashion Show Las Vegas, Nevada

DESIGNS FOR AN EXPANDED AND RENOVATED MALL ON THE LAS VEGAS STRIP CALL FOR A HIGH-TECH STREET FRONT AND A PUBLIC PLAZA.

by Clifford A. Pearson

Project: *Fashion Show, Las Vegas*
Client: *Rouse F.S., llc—Laurin B. Askew, FAIA, senior vice president and director of design*
Design architect: *Orne + Associates—Richard Orne, AIA, principal-in-charge; Scott Mykelbust, senior associate; Sean Duncan, associate; George Elian, Todd Hemker, Ana Thurik, design team*
Executive architect: *Altoon + Porter Architects—James F. Porter, AIA, principal; Fred Kerz, designer*
Engineers: *Ove Arup & Partners (structural, mechanical/electrical/plumbing); G.C. Wallace (civil)*
Consultants: *SWA Group (landscape); Fisher/Marantz (lighting); COMM Arts (environmental)*
General contractor: *Whiting-Turner Contracting*

Construction cost: *$200 million*
Scope of work: *Add 1 million square feet and renovate 1 million square feet of existing shopping center*
New components: *72,000-square-foot public plaza with cafe and electronic signage, 600-foot-long atrium equipped for live events*

With more than 30,000 people each day walking by the front door of its Fashion Show mall on Las Vegas Boulevard (aka "the Strip"), the Rouse Company saw an opportunity to do something big. And Richard Orne, AIA, principal of Orne + Associates, devised an attention-grabbing solution: a 450-foot-long "cloud" canopy that will provide shade and visual entertainment for a new 72,000-square-foot plaza.

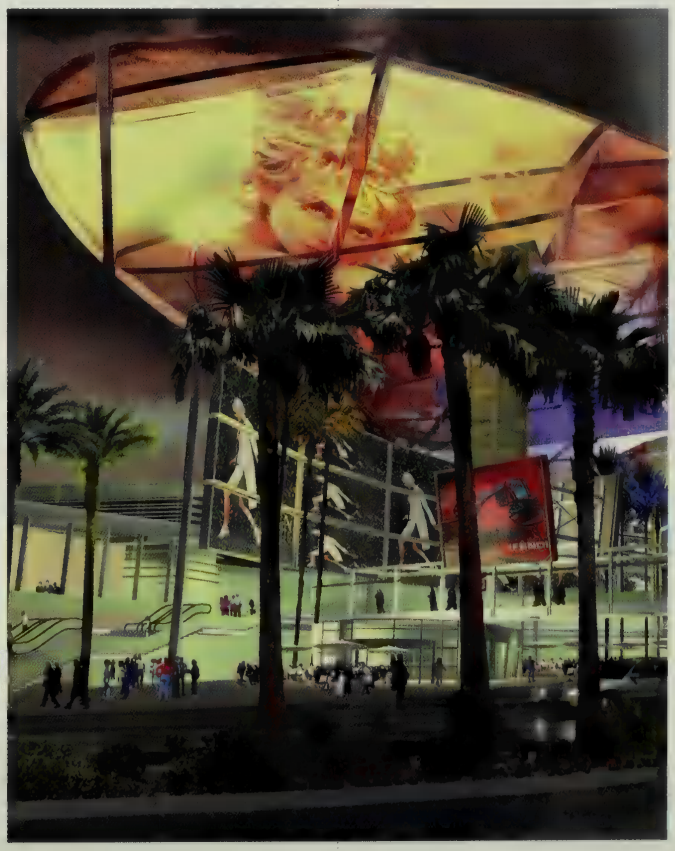
"The idea is to create a place where people can get out of the stream and watch all the action," says Orne of the 600-foot-long, 120-foot-deep plaza. Indeed, for all the activity on the Strip, there is no place visitors can sit right now and take in the urban scene. That will change in 2003 when an expanded and renovated Fashion Show mall opens.

Betting big on Vegas

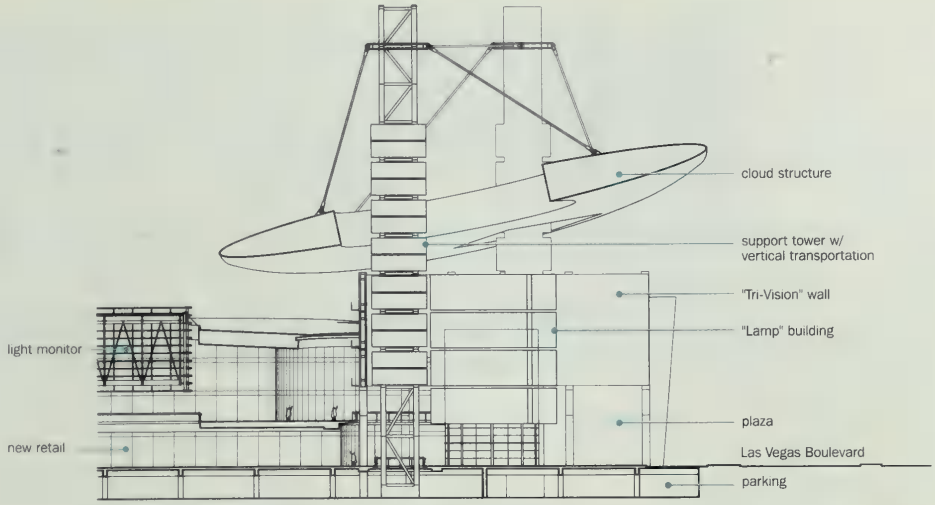
"The opportunity in Las Vegas is extraordinary," states Laurin B. "Monk" Askew, FAIA, the former vice president and director of design for Rouse, who now heads his own retail design and consulting firm, MONK LLC. "Las Vegas today is a worldwide market. People come from all over to shop here," he adds.

To get the attention of these shoppers, Orne has designed a street facade for Fashion Show that will combine basic amenities like tables and chairs along with high-tech razzle-dazzle. The cloud canopy, which will be wrapped with either perforated metal panels or perforated PVC fabric, will be suspended 100 feet above the street from three steel-truss towers.

Images will be projected onto the translucent cloud so people in the plaza and across the Strip can see them. And as if that weren't enough stimuli, a giant Tri-vision wall of special video screens will run below the cloud, and an internally illuminated "lamp" building in the center of the facade will carry images and messages using a new high-resolution electronic display technology developed at MIT called E-Ink. A cafe or a retail kiosk will



An existing department store will be torn down to make way for a new public plaza and a 450-foot-long "cloud" canopy (right). Images will be projected on the underside of the cloud (opposite), while a wall of giant video screens will provide another layer of images and messages (below).



SECTION THROUGH CLOUD STRUCTURE

occupy this building, turning it into a "habitable sign," says Orne. Behind the lamp building and the Trivision wall, a grand outdoor stair will take visitors from the plaza level to the second floor of shops, adding a theatrical touch to the mall exterior.

The addition will double the size of the existing 1 million-square-foot mall, adding 750,000 square feet of department stores and 250,000 square feet of smaller stores and common space. In the center of the shopping center, a 600-foot-long lozenge-shaped atrium will rise three stories and be flooded with sunlight from a ring of clerestory windows. For fashion shows and other live events, the mall will feature a 130-foot-long runway that can be lifted hydraulically into place.

An architecture of light

Orne is designing the sprawling complex as an antidote to the city's numerous windowless casino interiors, bringing in daylight through louvered light monitors and clerestories. He is even punching holes into the floors of the existing parking structures to bring sunlight in there, too. "We're using light as an organizing device and to create particular moments," explains the architect.

"What we're doing is creating an architecture of light and information, rather than of bricks and mortar," says Orne. ■

1. *Las Vegas Boulevard*
2. *Cloud structure*
3. *Department store*
4. *Frontier Hotel*
5. *Treasure Island Hotel*

3 Universal Studios Experience, Beijing, China

HODGETTS + FUNG BRINGS HOLLYWOOD TO A SHOPPING MALL IN CHINA, USING HIGH-TECH GADGETS AND BOLD GRAPHICS TO GET ATTENTION.

by Clifford A. Pearson

Project: *Universal Studios Experience, Beijing*
Client: *Universal Studios Recreation Group/Henderson (China) Investments*
Architect: *Hodgetts + Fung Design Associates—Craig Hodgetts, AIA, Ming Fung, principals; Martha de Plazaola, project manager; Denise Zacky, Thierry Garzotto, Janice Shimizu, Jeremy Duvall, Jennifer Dunlop, Michael Knopoff, Clover Lee, Andrew Lindley, Henry Buckingham, Thomas Gluck, Roderick Aichinger, Nicole Strunk, Kirsten Bank, project team*
Associate architect: *House & Robertson*
Engineer: *Ove Arup and Partners*
Consultants: *Joe Kaplan Architectural Lighting (lighting); Edwards Technology (audiovisual)*
Construction manager: *Welbro Management*
General contractor: *PS International*

Construction cost: *$10 million*
Scope of work: *Insert a 15,000-square-foot outlet in an existing shopping mall*
Key components: *Brand store, five Hollywood attractions, and juice bar*

Sources
Trowled epoxy terrazzo: *Key Resin*
Counter tiles: *Dal Tile*
Aluminum laminate: *Chemetal*
Metallic paint: *Cardinal Paints*
Theatrical lighting: *Times Square*

Inserted within a shopping mall in the center of Beijing, the Universal Experience offers a taste of southern California to the entertainment-hungry denizens of the world's most populous country. To bring Hollywood to China, the 15,000-square-foot project mixes high-tech gadgetry and easy-to-assemble components that were made in the U.S. and then shipped to the site.

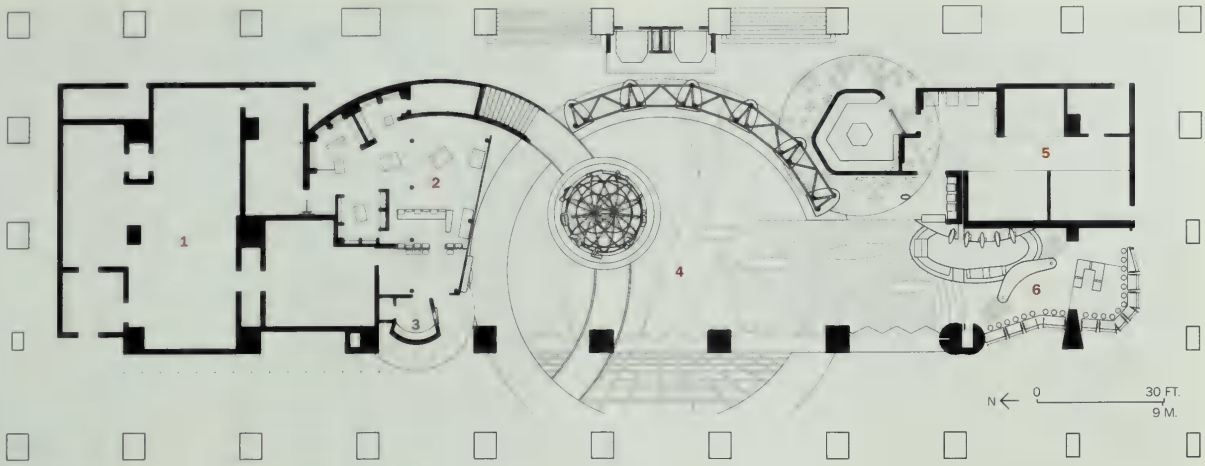
Seen by Universal as "location-based entertainment," the project brings together a Universal Studios store, five attractions serving up ersatz Hollywood experiences—from rides based on the studio's films to a tour of a prop master's room—and even a juice bar. The original idea was to create a prototype that could be replicated (with some variations) in other locations. A slowdown in China's economy and recent acquisitions by Universal's parent company Seagrams, though, have put rollout plans on hold.

A visually cluttered setting

Because it sits within a glitzy shopping center, the Universal Experience "needed a design vocabulary that could be added to what was there without getting lost," explains Craig Hodgetts, AIA, whose firm Hodgetts + Fung designed the project. "We used structure and color and iconic forms to survive" in the visually cluttered mall setting, he says.

Using a design approach borrowed from roadside graphics, the architects brought together colorful and three-dimensional elements in the juice bar (right) and the plaza (above and opposite).

1. *Hollywood Adventure*
2. *Store*
3. *Ticket booth*
4. *Plaza*
5. *Star Factory*
6. *Juice bar*



All the major elements in the project radiate from a circular plaza paved with boldly patterned terrazzo. To attract shoppers on the two floors above the Universal Experience, the architects designed the plaza to be "one of the project's primary facades," says Hodgetts.

On one side of the plaza are the Club California juice bar and the Star Factory photo studio; on the other side are the Universal store and the Hollywood Adventure, which charges admission and offers attractions based on films such as *The Lost World, Dante's Peak*, and *Waterworld*. The idea was to change these attractions periodically, disassembling them and shipping them to other Universal locations, reports David Glover, who was executive creative director at Universal and now is a principal at the Walker Group/CNI in Los Angeles. Each attraction was designed by Universal's in-house design group.

Mounted on steel columns on the edge of the plaza is a row of five large video screens playing a variety of film clips and images transmitted by the studio's closed-circuit "U-Link" network, which shows what is happening at other Universal locations such as Universal Studios in Orlando and City Walk in Los Angeles. The small outpost in Beijing may not be a big revenue generator, but its real goal is to sell a brand name, not a product. ■

To attract shoppers on upper floors of the mall, the designers treated the floor of the plaza as a "primary facade." Large video screens mounted on steel columns are angled so people in the plaza and those above can view them. According to Hodgetts, in an environment like this "the signs become architecture."

4 Fashion Valley Center San Diego, California

ADDING A SECOND LEVEL AND NEW ENTERTAINMENT COMPONENTS TO AN AGING SHOPPING CENTER WAS COMPLICATED BY MOTHER NATURE.

by Kay Kaiser

Project: *Fashion Valley Center, San Diego*
Owner: *Equitable Asset Management*
Architect: *Altoon + Porter Architects—Ronald Altoon, FAIA, partner-for-design; Carl Meyer, AIA, partner-in-charge; William Sebring, AIA, Randolph Larsen, AIA, partners; Ronald Benson, AIA, senior associate; Jack Fong, AIA, Thai Ta, associates*
Engineers: *Robert Englekirk (structural); Store, Matakovich & Wolfberg (mechanical); Nikolakopulos & Associates (electrical); Rick Engineering (civil); Woodward-Clyde (soils); Rolf Jensen & Associates (fire/building code)*
Construction manager: *O'Brien Kreitzberg*
General contractor: *Robert E. Bayley Construction*

Construction cost: *$80 million*
Scope of work: *Add 284,000 square feet and renovate a 1.7 million-square-foot shopping center*
New components: *Second-floor retail, multiplex cinema, food court, two indoor restaurants, bar, five parking structures, transit station*

Sources
Outdoor furniture and planters: *Wesnic*
Outdoor lighting: *Lightolier; Lithonia*
Fire-safety system: *Grinnel*
Signage: *Scott Architectural Graphics*
Paint: *Sinclair*

Designing a second-story, 284,000-square-foot addition to Fashion Valley Center in San Diego was similar to designing a theater, according to architect Ronald A. Altoon, FAIA, the principal-in-charge of design for the project for Altoon + Porter Architects of Los Angeles. "It's what people see on stage that counts," he said. "We just did what it took to make it work." But as every good stage manager knows, it's what the architects do backstage that makes a theater perform well.

The configuration of the original shopping center made adding an extra floor difficult. When Fashion Valley opened in 1969, it was a state-of-the-art linear mall. Anchor stores were designed by the offices of William Pereira, Charles Luckman, and Ed Killingsworth, titans of retail design at the time.

The challenge presented to Altoon was how to bridge the varying second-floor heights of the existing stores with a new addition. The architect and his colleagues responded by designing a series of stairs and turns that surprise shoppers intermittently in this very long complex. As a result, a journey though Fashion Valley is less repetitive than it might have been.

Treating much of its design as a backdrop for shopping, Altoon + Porter used benches, colonnades, and trellises painted a color Altoon calls "sky blue green" to set the stage. The firm also provided some theatrical lighting with a row of 15-foot-high luminaires on the second-level deck. These elements are super-scale versions of small tin lamps commonly found in Mexico and used for special occasions.

Kay Kaiser was the architecture critic for the San Diego Union/Tribune *for 10 years.*

New infrastructure, too

On a larger scale, the project included five new parking structures and a double-decked transit station with buses on the bottom and trains connecting the mall to San Diego's light-rail system on top.

A featured attraction of the expanded mall is a new 18-plex, two-story AMC Theater. Adjacent to it on the second level is a new food court called the Cafe Terrace and an open-air bar that seats 75.

A quarter mile long, the mall wraps around an outdoor path (this page and opposite). Sandy soil, a floodplain, and varying heights of existing buildings made adding a second level difficult. Part of the new mix of entertainment is a cineplex (opposite below).

1. *Department store*
2. *Retail*
3. *Cinema*
4. *Parking structure*

The new Cafe Terrace (above) provides outdoor seating for roughly two dozen food establishments. New canopies, benches, and plantings (left) create a handsome backdrop for shopping.

Indoors, there is a 5,000-square-foot sitdown restaurant.

The open-air center clearly responds to the common dream of southern California's benign climate and spectacular geography. The ironic part of this story is that many of the design challenges came from the site and climate, neither of which are as friendly as people believe.

The 1.7 million-square-foot, quarter-mile-long shopping center is in a long, deep, and verdant valley that stretches from the mountains east of San Diego to the sea. A river runs through the middle. The U.S. Army Corps of Engineers regards the site as a flood plain and has imposed critical mandates for flood control. Although the river is little more than a bubbling brook for most of the year, when it rains in winter, water rises right up to the service curb at the center's southern edge.

Because there was no alternative place on the site, Altoon and his associates had to place four of the new parking structures where floodwaters would run. So they designed the garages to act as levees.

"The floodway engineers wanted to be assured that whatever might be placed in the space between the river and the service curb would not in any way diminish the capacity of the discharge," says Altoon. "They wanted water to blast out of there without incident."

To let this happen, the contractor excavated below the raw grade of the parking structures, and the architects oriented the ramps and columns to create minimum drag on the flow of water. In addition, the columns were designed to withstand the impact of a floating truck moving at six knots. The height of the garages' ground levels had to exceed normal dimensions so that a person caught in a car upstream and whisked into the structure would have sufficient space between the floodwater and the bottom of the parking-structure deck to breathe and escape drowning.

Building on shaky ground

The river brought another problem to the architects: sand on the site and lots of it. The composition of the soil was prone to liquefaction in a major earthquake. Altoon and his engineers determined that the existing first floor could hold itself up during an earthquake but was not sufficient to take the additional load of a second floor.

The solution was to design and engineer the new second floor as an independent building. So, the addition straddles the original structure with columns front and back, while maintaining retail visibility by locating columns only at the divisions between stores. ■

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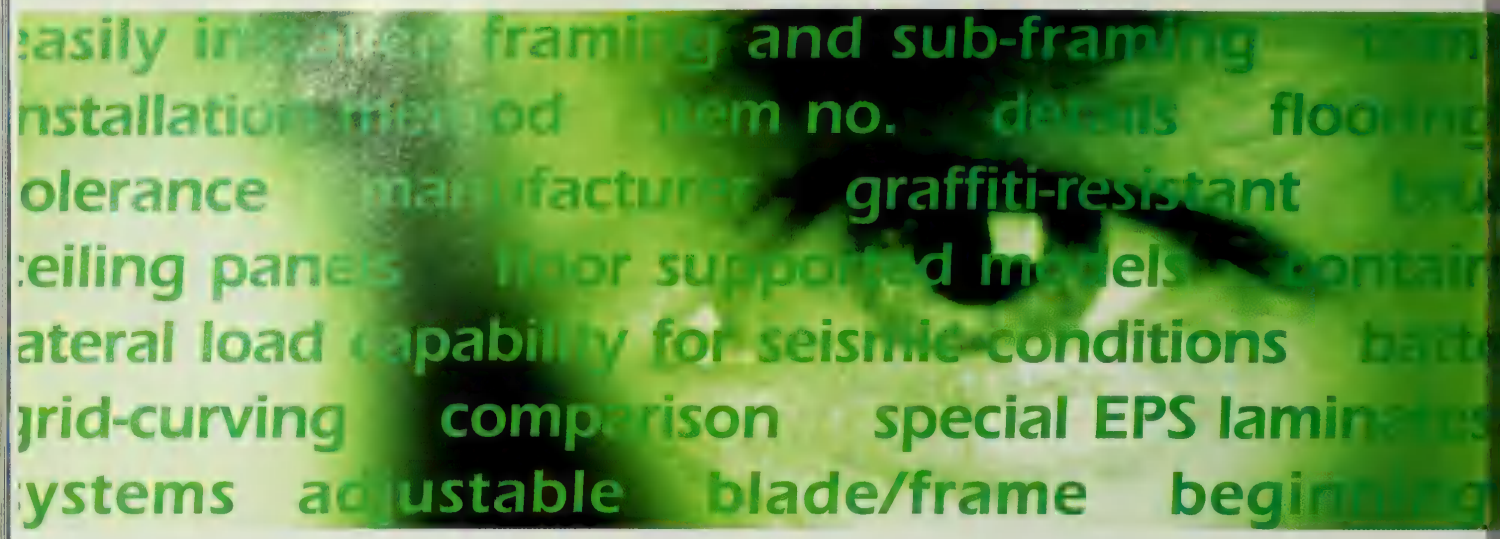

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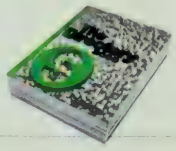

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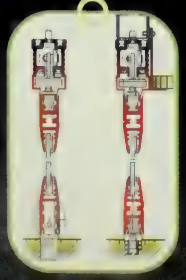

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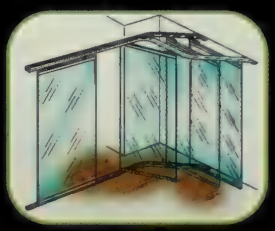

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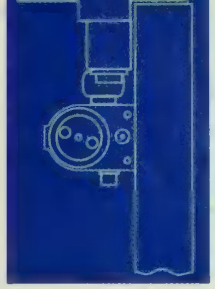

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UNDERSTANDING THE BASIC ELEMENTS AND HOW CODES INFLUENCE SPECIFICATIONS CAN SAVE ARCHITECTS TIME AND MONEY.

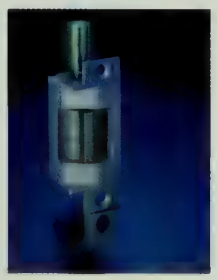
by Charles Wardell and Wendy Talarico

Door hardware is one of those subjects that architects should understand, but seldom do. When there are challenging, aesthetic details to think about, door hardware seems mundane. Yet it is the hardware that everyone counts on when they pop the touch bar with a hip while carrying their morning coffee, or flip the door stop with a toe to close out the hallway noise. The door must function reliably to keep intruders out, to keep some health-care patients in, and to allow egress in emergencies.

A door hardware package represents 6 to 7 percent of a typical job budget. Improperly specified, door hardware can cost thousands extra. Liability costs are also an issue, especially if injuries result from malfunctioning hardware.

H. Steven Bettge, a building codes specialist and an architectural hardware consultant with NBBJ in Seattle, tells of doors in a health-care center that were too narrow to allow a stretcher to squeeze through. The design team planned for a 44-inch clear opening, but the hardware consultant was thinking about building security and specified locking devices that reduced the opening size. The cost to correct the problem: $5,000 per door.

"If only the design team members would understand actual hardware terms," Bettge grouses. "They need to differentiate a door closer from an overhead stop and understand that a mortise lock is recessed into the edge of a door."



Bored lock and knob assemblies (top) are most common where security is not a serious concern. Cylindrical locks (above) are easier to install than mortise locks and are more commonly used.

Ideally, architects should have at least enough knowledge of door hardware to talk intelligently to clients and to work with consultants to make informed decisions. A few big manufacturers dominate the market—Yale Security Group, Ingersoll Rand Hardware, and Assa Abloy are among the largest—though the remaining 75 to 100 smaller firms are also significant. On a complex project, an architect may have to specify hardware from a dozen different companies.

Architectural hardware consultants have met standards set by the Door and Hardware Institute, an industry trade group. According to Jerry Heppes, executive director, consultants should have detailed knowledge of the total opening—understanding the doors, the hardware, and security issues, a topic that is increasingly integrated with door hardware.

Consultants are often manufacturers' representatives or employees of distributors, though some architects, like Bettge, also are qualified consultants. "As a rule, though, architects are facilitators and coordinators," says Heppes. "The doorway is complicated, not only in function and finishes, but also in codes and security concerns. The increase in technology that's driving new products requires a lot of technical knowledge."

James Simpson, AIA, with YHR Partners Architecture Planning in Moorhead, Minn., specifies his own hardware most of the time, but relies on consultants for some functions. "They are a real asset in finding hidden costs and keeping track of all the parts and pieces of each component. They are also more up-to-date on changes in product lines and innovations," he says.

The role of the consultant is particularly important as the industry places greater emphasis on electrified products. "Almost all perimeter doors will soon have some electrified product, whether a card reader or an alarm that goes off if the door is opened," Heppes says. With electrification, hardware and security issues are merging. "A consultant can sort through both of these areas," he adds.

Charles Wardell is a Martha's Vineyard, Mass.-based freelance writer who specializes in technology-related subjects.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 176 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Clarify the function of the each of the various elements of door hardware.

2. Explain the function of door hardware in terms of meeting building codes.

3. Describe how the type of metal, its gauge, and the finish that is used on hardware affect its quality.

4. Explain how electronic hardware is changing the way doors are being specified.

Parts of a door

"The function of the door is the primary consideration in specifying hardware," Simpson says. "Is the door fire-rated? Is its main job to keep people out or in? How many people will be using it each day?"

Door hardware is everything that holds the door in place and operates it. This includes eight broad categories: hinges, locks, handles and knobs, bolts, exit devices, closers, door holders and stops, and accessories, such as weatherstripping and padlocks. There are also specialty items for large or glass doors, or doors used in hospitals, hotels, historic renovations, auditoriums, and other unique buildings.

Some categories of hardware are familiar, such as knobs and levers, hinges, and most accessories, though even these must be carefully specified. For example, though hinges come in many configurations, depending on the operation of the door, they must be consistent with the weight and frequency of use of the door. Ball-bearing, oil-impregnated, or antifriction bearing hinges should be specified for doors equipped with closers for smooth operation.

Locks are probably the most important category and the most complex. They have three basic components: some type of latch bolt, a lock strike, and a cylinder. A bolt is the metal bar that protrudes from the lock and holds it to the strike—the metal compartment in the door that "keeps" or contains the bolt. Spring-loaded latch bolts, which retract when the knob is turned, are used in most all doors. The cylinder contains the springs and tumblers that allow the keys to operate.

A commercial-quality lock has added features that give more security, such as heavier gauge metal, a longer throw on the latch, and more locking functions. Mortise (rectangular shaped and embedded in the edge of a door) locks are stronger than other types and more expensive to purchase and install. Cylindrical locks, which come in light, medium, and heavy-duty grades, are fine for many applications, though mortise locks are more suitable when tight security is imperative.

Bolts, either flush or surface, are part of the door's locking capacity, though they are independent of the lock mechanism. Either flush (concealed within the door) or surface (applied to the top of the door) vari-

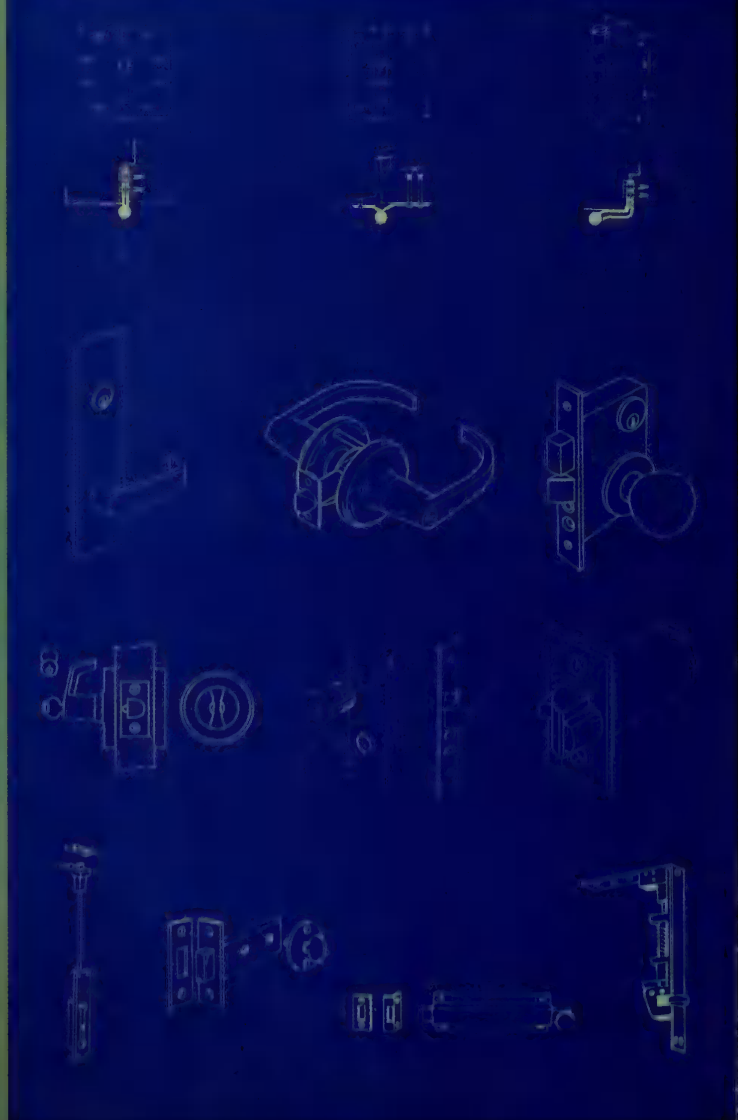
DOOR HARDWARE SELECTION GUIDE

HINGES: Types include full mortise, half mortise, full surface, and half surface. The hinge used depends on the door mount and furnish. For example, spring hinges use the springs contained in them as automatic closers. These are best for doors that don't receive heavy traffic, but need to be closed each time they are used. Swing clear hinges are bent so that a door can open fully, allowing a clear opening. Among conventional hinges, five knuckles used to be standard, though many installations are moving to three-knuckle hinges.

HANDLE & KNOBS: Lever handles are most commonly used in commercial applications to meet recommendations set by the ADA. This is the most visible and "touched" portion of the assembly, so a good, lasting finish is important. Brass is probably used most often for decorative applications. Steel, however, offers high strength and low cost.

LOCKS: Four basic types. Across names describe how the lock assembly is installed in the door: bored, pre-assembled, mortised, and integral. Each type includes some or all the following components: latch, latch bolts, dead latches, dead bolts, lock strikes, and cylinders. Mortise locks are stronger and more versatile than other types. Magnetic locks use an electromagnet that may be stronger than the door itself.

BOLTS: Installed flush with the door or on the surface, bolts can supplement a lock or hold the inactive half of a double door in place. Some bolts operate vertically, with some type of strike at the top of the door frame and in the floor. Bolts may operate as the knob is turned, or they may operate independently.



eties are used, though the latter are easier and less expensive to install.

Exit devices are latches released by pressing some type of cross or touch bar, often called a panic bar. These open faster and easier than knobs or levers and, therefore, are safer in many applications, particularly fire doors. Codes strictly limit how and where they are applied to the door. Most have a "dogging" feature, which keeps the latch in a retracted position, creating a push-pull door. In addition, vertical-rod exit devices provide latches at the top and bottom of the door, instead of the side, as in the rim or mortised exit device.

The closer controls the door throughout its opening and closing swing. It has three components: a power source, a checking source that controls the rate at which it moves, and a connector or arm that links the door and the frame. The power source is a spring, and the checking source is a hydraulic mechanism. There are several features that can be added to the basic functioning of the closer, such as delayed action and hold-open functions. Closers can be concealed in the door, frame, or floor, or they may be surface mounted.

In special applications and in the case of fire doors, electromagnetic or pneumatic door closers are combined with smoke detectors. The doors shut automatically if the smoke detector is triggered. These closers provide a legal means of holding doors open that would otherwise have to be closed for fire protection—in hospital corridors, for example.

Door holders and stops prevent the swinging door from damaging an adjacent wall, partition, or piece of equipment. Stops are really glorified bumpers; pieces of metal with rubber tips. Some can be flipped into place or are spring loaded. Overhead holders are mounted to the door and frame and have an arm that limits the door swing.

What's good?

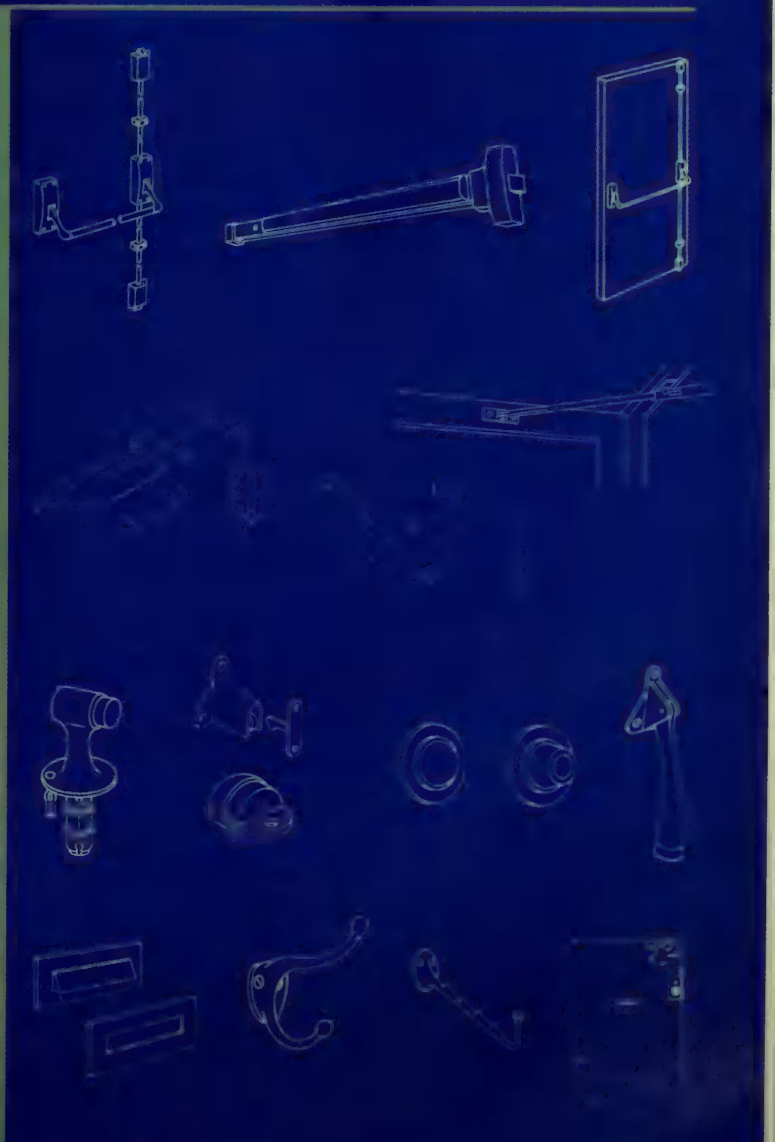
Discerning quality means understanding the kind of metal used, the gauge, and the finish. As a rule, steel and stainless steel make the strongest door hardware. Heavy doors that receive high usage need stronger gauges. But instead of specifying this information, manufacturers talk a lot

EXIT DEVICES: These consist of the latch, a crossbar (sometimes called a panic or touch bar), and trim—a lever or plate located on the outside of the door, opposite the crossbar. Installed as rim, mortise, surface vertical rod, or concealed vertical rod, the exit device selected depends on the door. Single doors use rim or mortise-style exit devices, while double doors have a vertical rod that latches into the frame above and the floor below. These allow quick, easy egress in case of emergencies or in crowded spaces.

CLOSERS: Whether surface mounted or concealed, the quality of a closer varies. These should be selected according to the amount of traffic the door gets. The closer consists of a spring, covered power source, a checking source that controls the rate at which the door moves, and a connector or arm that links the door and the frame.

DOOR HOLDERS & STOPS: Stops protect walls, columns, and equipment from the door as it swings open. They are frequently metal with rubber bumpers on the top or front. Holders, attached to the door and frame, are used to keep a door in an open or semi-open position.

ACCESSORIES: There are numerous types of accessories, ranging from peepholes to gaskets, weatherstripping to alarm devices. Kick plates, pulls, and push plates are also considered accessories.



about cycle tests. These are guidings based on ANSI test standards for all hardware. ANSI Grade 1 means the component has passed a higher number of cycle tests than Grade two or three. One company may boast that its door closer is tested to 500,000 cycles. That sounds impressive, but a competing product may have passed 2 million cycles.

Even cycle testing, though, is not always reliable. "Unless you're a metallurgist, evaluating quality is tricky. And there can be subtle differences on the inside of an assembly, such as the quality of the arms on a closer," Simpson says. Often the only way to make an accurate comparison is to talk to people or to look at an actual installation.

Flowers recommends making decisions based on the warranty. "I'm not sure it matters to the clients what the body is made of, as long as they have a warranty that will cover them for the life of the building," she says.

Plated finishes are applied for aesthetics and to prevent tarnishing and oxidation. In some cases the metal is simply polished, brushed, or lacquered to achieve a certain look. "These are cyclical," says Susan Flowers of Cleveland Vicon Co., a hardware distributor in Cleveland. "We go through phases where everyone wants polished chrome, then polished brass, then bronze. We've found that the most durable is dull chrome or dull stainless steel."

The plating process has changed drastically within the past few years, in some cases allowing more durable finishes. But the process will change even more as environmental rules become more stringent. Plating brass, for example, requires cyanide. To reduce the amount of cyanide dumping, platers are forced to apply thinner coatings.

Powder-coating is one alternative to plating. It's not as harmful to the environment, and it's durable, but it doesn't produce a fine metallic finish. Also, solid nylon handles are available, as well as nylon-covered metal handles. They're used in desert areas on exterior doors because they don't transmit heat.

Know the codes

"Unless they have someone dedicated to keeping track of codes and changes, architects will have a hard time keeping up with regulations," says Bob Cook, president of Securitron Magnalock Corp., a hardware distributor in Sparks, Nev.

Hardware, particularly on fire doors and building exits, is mandated by local and national codes. The specifics vary, but the basic premise is to provide free egress at all times. "When an individual approaches a door, they need to be in control of their own destiny," Cook adds. "All the model codes say you must be able to exit in one operation, one simple maneuver. And that maneuver must be obvious, even in the dark. For example, to operate a lever, one simply pushes it down, the latch releases, and the door opens. If a deadbolt is added but the lever doesn't retract it at the same moment it releases the latch, then that door becomes illegal."

"UNLESS YOU'RE A METALLURGIST, EVALUATING QUALITY IS TRICKY."

Fire performance and accessibility have influenced codes the most, Cook says. Architects should have at least a basic familiarity with the Americans with Disabilities Act (ADA) and the National Fire Protection Association's Life Safety Code as they relate to door hardware.

As a result of the ADA, for example, knobs are almost extinct, except in residential units. Spacing for levers and panic bars on closing devices are crucial. Surface-mounted vertical-rod exit devices on double doors can pose problems. The footrest of a wheelchair can catch on the bottom of the door and prevent the person from exiting. As a result, the bottom 10 inches of a door is supposed to be smooth and uninterrupted. Some companies make a plate the vertical rod, so it conforms to code.

Fire codes and the ADA also dictate the placement of panic hardware. For example, some states require a mounting height between 30 and 44 inches. Others prohibit placing panic bars below 36 inches.

Wired openings

The future, it seems, lies in all things electronic, including door hardware. Though the wired variety costs up to 10 times more than standard hardware, it offers some critical advantages. Aside from making it easy to log the comings and goings of building occupants, electronic devices make it possible to seal off a fire in a portion of the building from a computer in a remote location, open a door with the click of a transmitter, or lock down an entire building with the flick of a switch.

The components are somewhat the same, though they are often wired to perform their functions automatically. The locking system, for example, is wired so that the bolt is thrown or retracted at a signal from the keypad or keying system, or from a central station. The keys have a code number so that the system can record keyholders' comings and goings.

If specifying standard door hardware is complex, dealing with electronic systems is even more so. Products are new enough that many architects aren't sure who the leading manufacturers are, how to determine quality, or who to designate to do the design work and installation.

James Simpson, AIA, with YHR Partners Architecture Planning in Moorhead, Minn., relies on electrical engineers to get power to the door frame and to specify the card reader. The architect specifies the strike release and the power supply for a door. The strike is wired by an electrician and installed by whomever is doing the doors and hardware. But, he says, everyone seems to be doing this a little differently.

"We've seen specs from reputable architecture firms where they've forgotten to run power to the door, missed one of the connections, or specified the power incorrectly," says Susan Flowers of Cleveland Vicon Co., a hardware distributor. For instance, the strike release needs to be the same voltage as the power supply. It's not uncommon for one to be 12 volts DC and the other to be 120 volts AC, requiring a transformer. Failing to specify this could hold up the job later.

Flowers recommends working with consultants who are familiar with these products—usually those working for distributors who offer the full gamut of electronic access controls.

Electronic systems bring unique problems. "We had a situation where a magnetic locking system wasn't working properly. We realized that interference from other electronic hardware behind the device was causing it to malfunction," Simpson says. The solution? They tacked a piece of tinfoil behind the equipment on the other side of the wall.

Another problem that lingers in the minds of anyone involved with electronic locking devices: What happens during a power failure? "Backup power," Cook says. "If the building doesn't have it, a battery backup lasts 32 hours." *C.W. and W.T.*

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CIRCLE 69 ON INQUIRY CARD

Many jurisdictions require a 32-inch clear opening for wheelchairs, but the panic hardware sticks out and becomes an obstruction. "Some panic hardware isn't allowed on a [illegible]-foot door," Flowers says. "But some codes say that anything mounted above 34 inches may extend 4 inches into the width of the door."

The International Building Code, available for adoption by local jurisdictions in 2000, won't result in any substantive changes in door hardware requirements, but it will affect manufacturers by requiring positive-pressure testing of fire-door assemblies and hardware. This means doors must be tested under realistic conditions; in the past, they were subjected to a gas furnace, then sprayed with a fire hose to make

HARDWARE DISTRIBUTORS AND SECURITY COMPANIES ARE CREATING ALLIANCES

sure the door didn't fall out. But testing this way pulls cool air from the other side of the door, which changes the results. In an actual fire, warm air builds up in the top half of the room, and cool air in the bottom. The top half of the door is pulled one way, and the bottom half the other. Somewhere between them there's a neutral pressure plane. Doors must stay latched under these conditions.

Positive-pressure testing is expensive for manufacturers. More of them are including intumescent seals that expand to fill the opening and close the gap to keep the door in place. Door closers are also affected because the fluids in some are flammable. Some hardware will have to be redesigned, and some products will be offered in two grades while others all will be fire rated.

Hardware meets security

"Access control" refers to electrified door hardware products that connect to a larger security system within the building. These systems are growing in both complexity and in use, requiring architects and consultants to become specialists in electronic door hardware and security.

"I look at the openings, including the hardware, the frames, and the access control, as a unit. People in the openings business are best at access control. We know the rules and regulations. Just because there's a piece of wire doesn't mean we have to be afraid of it," says Daniel Heinz, president of Nelson Holland Inc., a distributor in Phoenix.

The Door and Hardware Institute's Jerry Heppes agrees. "The hardware distributor and the security company are at the table together, creating alliances," he says. "Ten years ago, they were two separate industries. Now they're overlapping. Locks support the monitoring system and hinges have space for security wiring to run through them."

Electronic controls bring a different type of security to the door. "They provide knowledge. The building owner has a record of who was in the building and when," Cook says. "Electrified hardware also provides convenience. The building can be locked down for the night by flipping a switch." When it comes to the actual performance of the hardware, electronic controls may sound as if they provide better security, but Cook adds, "A good old mechanical deadbolt is better." ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "The Ins and Outs of Door Hardware" using the learning objectives provided.
- Complete the questions below, then check your answers [page 196].
- Fill out and submit the AIA/CES education reporting form [page 196] or file the form on ARCHITECTURAL RECORD's Web site at www.archrecord.com to receive two AIA learning units, including one hour of health, safety, and welfare credit.

QUESTIONS

1. What is the overarching objective of all the model codes for the operation of door hardware?

2. What are the functions of each of the elements of door hardware?

3. How will the new International Building Code influence door hardware specifications?

4. How is the quality of door hardware rated?

5. How is door hardware affected by electronic security devices?

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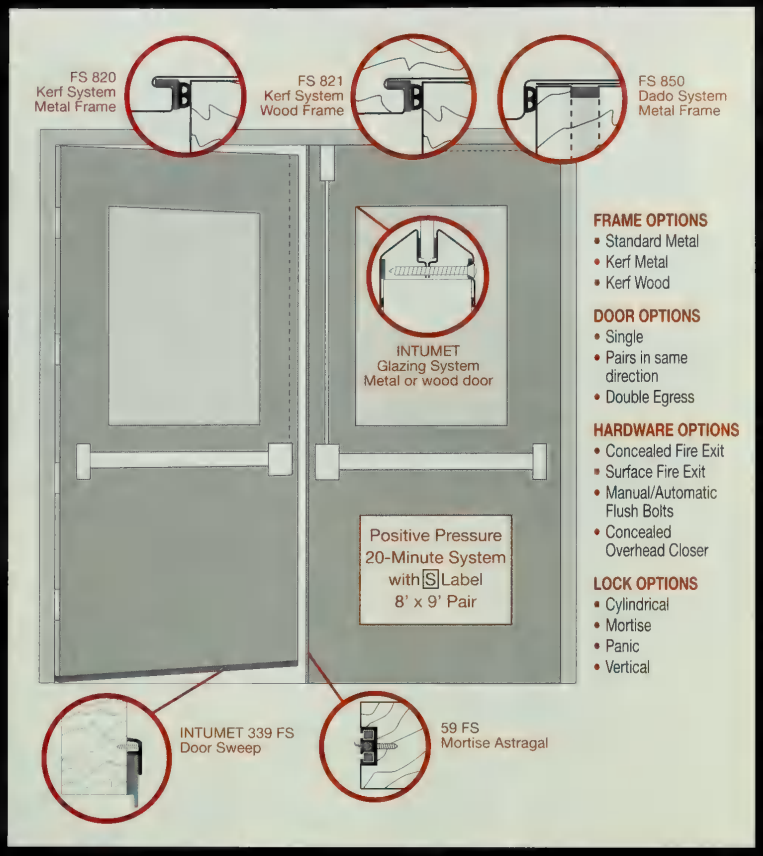

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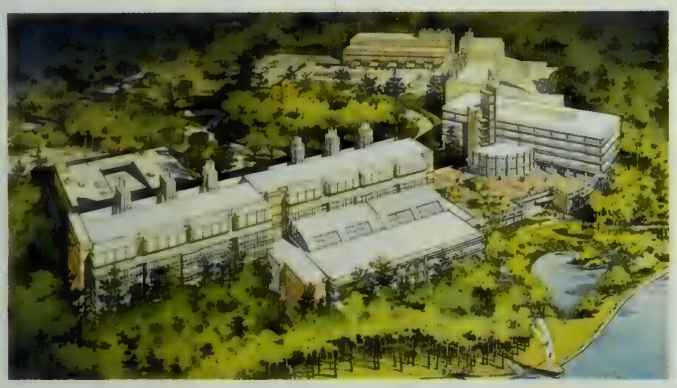
TECHBRIEFS

SUSTAINABLE BUILDINGS: NOW MANDATORY ON THE FEDERAL LEVEL

It's been almost 120 days since President Clinton issued his executive order, "Greening the Government Through Efficient Energy Management," an edict that calls for major reductions in energy use among federal buildings—the largest energy consumers in the U.S. The order calls for the development of sustainable design principles for siting, designing, and building new federal facilities, all within a 120-day limit.

To create these principles, the government is turning to architects familiar with green design. Requests for proposals are already calling for architects with sustainable design experience. "They want firms with in-house expertise, not those who need consultants on energy efficiency or green products to join the team," says Gale Lindsey, AIA, of Wake Forest, N.C., former chairman of the AIA's Committee on the Environment.

The order also requires federal agencies to reduce per-square-foot energy consumption by 35 percent by 2010 relative to 1985. The Office of Management and Budget must develop an "energy scorecard" for evaluating each agency's progress. *—Wendy Talarico*



Hellmuth, Obata + Kassabaum was hired to design the new Environmental Protection Agency Campus (above) in Research Triangle Park, N.C., in part because of its experience with sustainable design.

INTERNATIONAL CODE COUNCIL MEETS **September was a big month for code officials. For the first time, representatives of all three code organizations met to finalize the new International Code Council's (ICC) building code. September 12–17, officials from the International Conference of Building Officials (which produces the Uniform Building Code), the Building Officials and Code Administrators International (which produces the National Building Code), and the Southern Building Code Congress International (which produces the Standard Building Code) formally pooled efforts and voted on the components of the international code, available for adoption in 2000. While some of the code has been available for several years, the 2000 version will be a full edition, including residential, fire, and building documents. Various localities may still reference the regional codes, but there will be no more amendments to these. "All our efforts are going into the ICC, at least for now," says John Battles of the Southern Building Code Congress. *—W.T.***

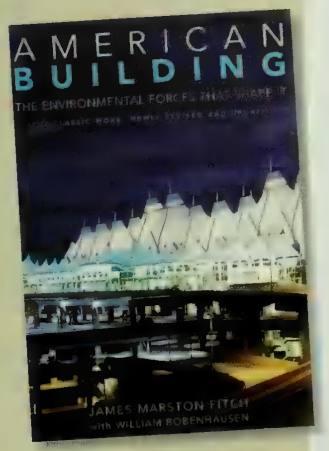
HOW LONG WILL THAT DECK LAST?

Most decking wood is treated with waterborne preservatives, principally chromated-copper arsenate (CCA) applied in a pressure chamber to help it penetrate into the wood. The process is supposed to extend the life of the wood to at least 25 years. A recent survey found that many decks are replaced after less than 10 years. This has implications not only for the value of decks and other applications for pressure-treated wood, but also for disposal considerations regarding treated wood.

The research, based on 3,197 surveys sent to carpenters in the southeastern U.S., showed that 67 percent of the removed decks were under 10 years old. Of the reasons given for removal, 57 percent were due to deterioration of the deck, either "rotted or bug eaten" or "structurally unsound." The remaining 43 percent were removed because the "owner didn't like the look of the wood."

To some degree, these results can be explained by the fact that pressure-treated wood is not immune to checking and splitting, though it's often promoted as "maintenance free." Manufacturers now offer premium decking with protective coatings, and all recommend annual maintenance with water repellents. Another frequent problem is improper deck design and construction that traps moisture. The survey doesn't say to what extent these problems are responsible for early replacements.

If treated wood does not last the 25 years that its manufacturers claim, the use of toxic chemicals in it is difficult to justify, particularly in light of disposal problems. Wood in landfills releases toxins into groundwater. Meanwhile, many incineration facilities refuse to burn it because of the difficulties in disposing of the heavy metals that are produced during the combustion process. *—Nadav Malin*



AN UPDATED CLASSIC

Recently revised, *American Building: The Environmental Forces That Shape It*, James Marston Fitch's 1947 classic book about the effects of buildings on people and their surroundings, now includes commentary on contemporary buildings, such as the Main Terminal of the Denver International Airport. William Bobenshausen, an architect and adjunct professor at the School of Architecture and Environmental Studies at the City College of New York and the New Jersey Institute of Technology, worked closely with many architects who specialize in sustainable design as he updated the book. A new chapter, "Toward Sustainability," focuses on energy conservation, while ideas and case studies on sustainable design and material usage are inserted throughout the book. There are also investigations of inner-city and suburban renewal projects, such as Baltimore's Inner Harbor and Seaside in Florida. Chapters on air quality, heating and cooling, structural systems, and noise control now include new technologies, along with the original author's classic ideas. *—Dan Newberry*

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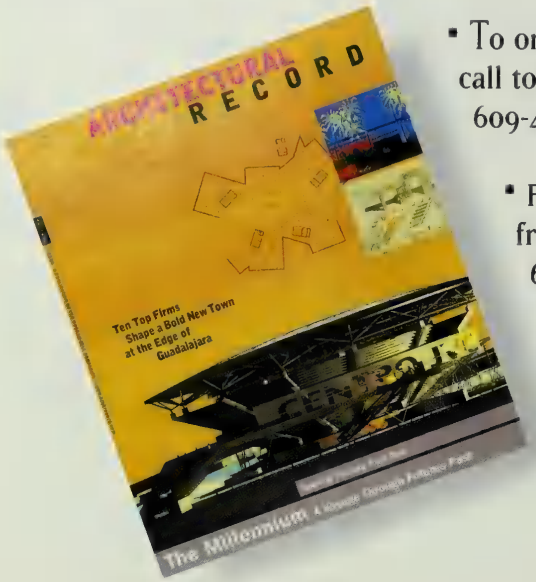

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CALL FOR ENTRIES

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The editors of ARCHITECTURAL RECORD announce the 44th annual RECORD HOUSES awards program. This program is open to any registered architect; work previously published in other national design magazines is disqualified. Of particular interest are projects that incorporate innovative programs, building technologies, and use of materials. There is an entry fee of $50 per submission; please make checks payable to ARCHITECTURAL RECORD.

Submissions must also include plan(s), photographs (transparencies, slides, or prints), and a brief project description bound firmly in an 8½-by-11-inch folder, and must be postmarked no later than October 31, 1999. Winning entries will be featured in the 2000 RECORD HOUSES. Other submissions will either be returned or scheduled for a future issue. If you would like your entry returned, please include a self-addressed envelope with appropriate postage.

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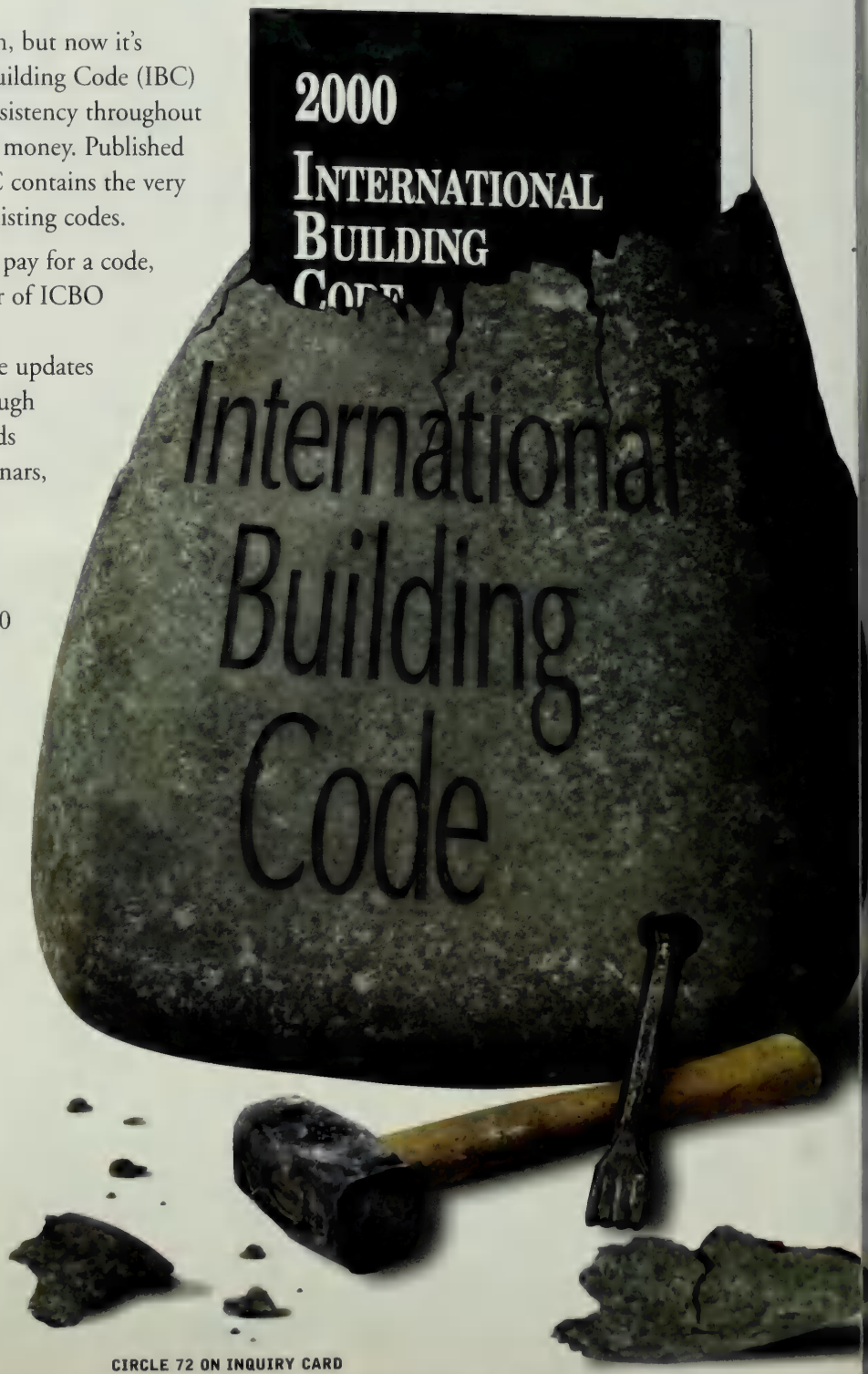

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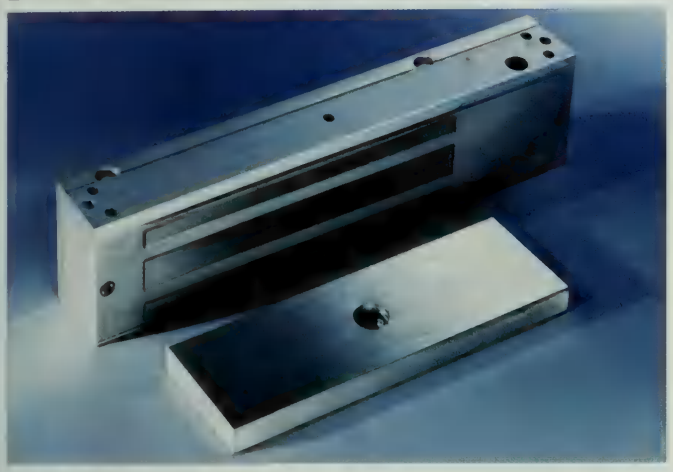
CIRCLE 72 ON INQUIRY CARD

NEW PRODUCTS

If your next project requires doors, and most projects do, then it will also require door hardware. Specified for decoration, security, safety, or accessibility, the category of door hardware includes everything from locksets, hinges, closers, push/pull plates, knobs and handles, to keys and key systems. In addition to the products listed here, check out this month's Technology article [page 171] where we take an in-depth look at the subject. Of particular interest to architects at the moment are advances in electrified hardware; examples are highlighted below and in the roundup on the following page. ***Rita F. Catinella, Products Editor***



ELECTRONIC LOCKS CAN HANDLE 300 TO 1650 POUNDS OF FORCE

The DORMA Group has introduced a line of electronic access-control hardware to complement the company's full range of door controls and exit devices. The line features electromagnetic locks (shown above), shear locks, delayed-egress locks, power supplies, electric strikes, keypads, switches, and other accessories.

Included in the new line are single- and double-unit electromagnetic locks and specialized electromagnetic locks designed for such applications as gates, cabinets, and sliding doors. They feature holding forces ranging from 300 to 1,650 pounds.

Also available are shear locks, either surface mounted, concealed, or semiconcealed, and a delayed-egress lock that complies with NFPA 101 life-safety requirements. Programmable digital keypads include on-board microprocessors and nonvolatile memory. 800/523-8483. DORMA Architectural Hardware, Reamstown, Pa. **CIRCLE 200**

ELECTRONIC ACCESS CONTROL WITHOUT BATTERIES OR WIRES

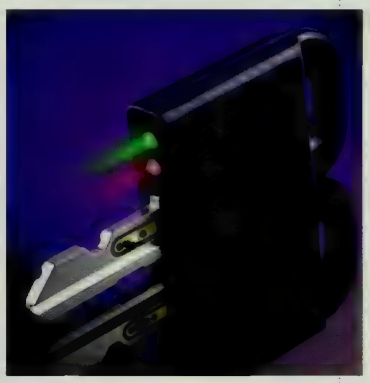
With an internal generator, the PowerLever makes its own electrical energy each time the lever is depressed. Without batteries or wires, the PowerLever 3000 model shown here, allows access for up to 96 users and records up to 945 date/time-stamped audit events.

PowerLever offers various features including keyless six-digit entry, user-changeable PINs, wrong-try lock-out (prevents hackers from determining combination through trial and error), and a choice of finishes. PowerLever is appropriate for a variety of applications, such as the private or

restricted areas of airports, banks, office buildings, and educational facilities. 800/950-4744. Mas-Hamilton Group Inc., Lexington, Ky. **CIRCLE 201**

PROGRAMMABLE KEYS AND LOCKS OFFER SECURITY AND EASE OF REKEYING

Part of the Yale Security Group, Corbin Russwin's Intellikey (below) is a patented technology that combines the benefits of retrofittable high-security cylinders with

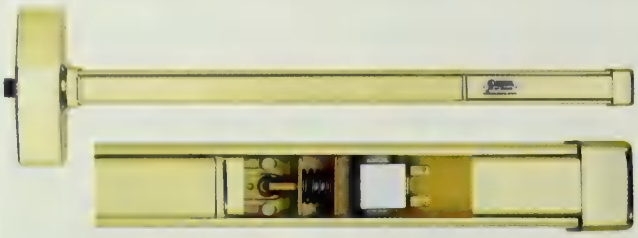


access-control capabilities and easy "re-keying." The system can be fitted to existing doors and locks. Keys and locks can be programmed to allow or restrict access to different parts of a building or even throughout sites worldwide. The information stored in each key and lock can be transferred to a computer to provide precise information about were and when each key has been used, such as date, time, and whether access was allowed.

Also available from Corbin Russwin is the Vineyard Collection of decorative levers, roses, and escutcheons for use with the ML2000 Series Corbin Russwin Mortise Lockset. The Vineyard Collection consists of four lever designs including Merlot, Frascati, Zinfadel, and Tuscany. It is available in five architectural finishes, including Lifetime Infini-T Finish in bright and satin brass finishes.

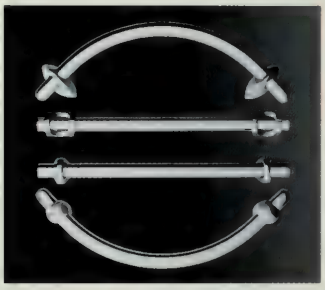
Rixson, another member of the group, offers the triple-voltage electromagnetic door release (below). This release features a low-voltage coil that allows for full field adaptability, low-amperage draw (.02), and new extension pieces that can meet any requirement, including bends. Rixson's electromagnetics are designed specifically to hold fire and smoke barrier doors until released by a remote smoke detector or other switching device. Warehoused for immediate shipment, the electromagnetic door release is energized by 12vDC, 24vAC/DC, or 120vAC. 800/438-1951. Yale Security Group, Monroe, N.C. **CIRCLE 202**

▲ Millennium falcon
The Falcon T Series (above) is a heavy-duty Grade 1 key-in-lever lockset that has 3 lever designs, 25 functions, and 6 finishes. It's UL listed for three-hour A-label doors, meets ADA requirements, stands up to heavy abuse and vandalism, and accepts virtually all competitors' standard cylinders and interchangeable cores. Also available from Falcon is the M Series, a heavy-duty mortise lockset that has 7 lever designs, 3 knob designs, 27 functions, and 8 finishes. 800/266-4456. Falcon, Brea, Calif. **CIRCLE 203**

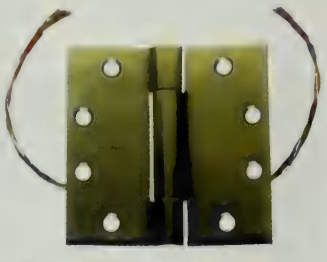


▲ Electric dogging pushbars
Monarch Hardware introduces electric dogging to pushbar series devices. This feature electronically holds the touch bar depressed, eliminating touch-bar movement when the latch is held retracted at dogged position (bar shown on top; detail, below). Electric dogging allows quiet operation, ideal for theaters, libraries, courtrooms, auditoriums, and churches. The pushbars are UL-listed, panic- and fire-rated exit devices with retrofit availability. 800/826-5792. Monarch Hardware, Shepherdsville, Ky. **CIRCLE 204**

► New direction in door pulls
The Compass collection's doorpull grips and standoffs may be mixed in an array of combinations and come in a variety of standard materials and finishes. Suited for interiors or exteriors, doorpulls may be single mounted or mounted back-to-back on doors. 877/323-3344. Hardware+, A Forms+Surfaces Company, Carpinteria, Calif. **CIRCLE 205**

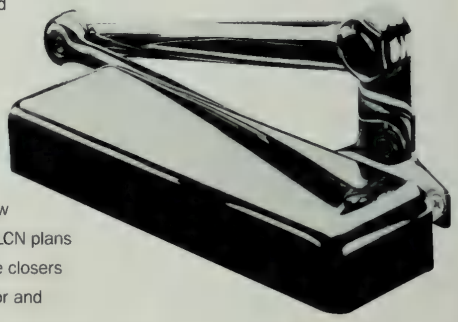


▼ Levers and plates
The Bellissimo collection features four new levers and a selection of escutcheon plates. The levers and plates are available in seven different finishes: satin chrome, polished chrome, brass polished, antique brass, dark bronze, white powdercoated, and pewter. 800/927-1097. G-U Hardware Inc., Newport News, Va. **CIRCLE 206**



▲ 10-wire door hinge
Stanley has introduced a new hinge to its CB series. The CECB 1900 10-wire hinge is now available for a broad range of door applications including swing clear, wide throw, concealed, slip-in, and special applications. Approved for use in three-hour, fire-rated door assemblies, the hinges serve a broad range of commercial applications where multiple door sensors are needed. The 10-wire hinge enables the door to power up to five sensors or electronic door strikes. 800/337-4393. The Stanley Works, New Britain, Conn. **CIRCLE 207**

▼ Closer passes fire test
LCN, a division of Ingersoll-Rand Architectural Division, has introduced a new line of door closers designed for fire-rated openings. In tests conducted by UL, the LCN closers were subjected to the new Positive Pressure Fire Test, which calls for the closers to be mounted on the on-fire side of the door. LCN passed the test due to the combination of new cylinder components and a new heat-resistant, hydraulic fluid. LCN plans to offer a full line of ANSI grade closers that can be mounted on interior and exterior doors in all standard mounting configurations: hinge side, over-the-door (push side), and parallel arm (push side). 800/526-2400. LCN, Princeton, Ill. **CIRCLE 208**



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CIRCLE 73 ON INQUIRY CARD

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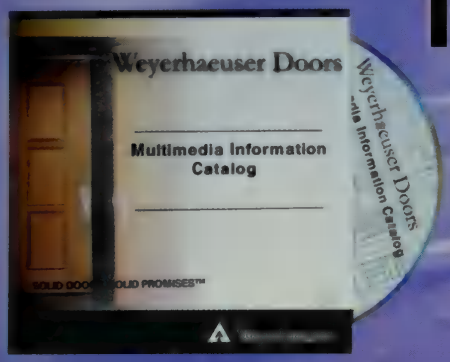

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CIRCLE 92 ON INQUIRY CARD

THE CONCEPT BEHIND A STEELCRAFT POSITIVE PRESSURE DOOR.
Steelcraft, innovator in life safety and security, presents the premier line of positive pressure frame and door products. Since the early 1990s, Steelcraft has led the hollow metal industry in conducting and passing positive pressure testing to provide advanced fire protection. While some companies are making a big issue about passing positive pressure testing, Steelcraft has provided thousands of positive pressure frames and doors to world-class facilities and projects - 5,000 to the enormous Chek Lap Kok Airport and its mass transit roadway and rail system in Hong Kong. Steelcraft positive pressure certified frames and doors comply with tests UBC 7-2, UL 10 C and several international positive pressure standards. Are we sure we're better under pressure? We're positive.
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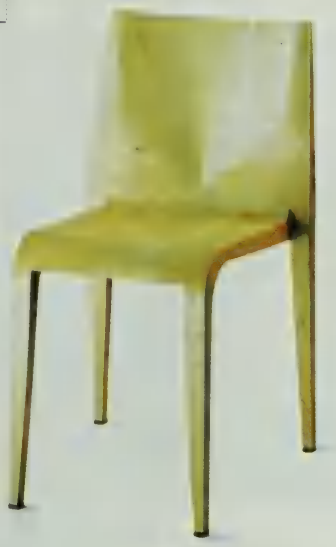
CIRCLE 74 ON INQUIRY CARD

PRODUCT BRIEFS

► Lighter than air

Introduced at the International Contemporary Furniture Fair held in New York this past May, the Laleggera chair, designed by Riccardo Blumer, weighs only 5.3 pounds. This lightness is achieved through a special process, also used in the construction of glider planes, by which a polyurethane filling is injected into the wooden structure. Laleggera has a solid maple frame with surface finishes available in natural maple, cherry, or an ebony-tinted ash. The foot pads are offered in felt or soft or hard rubber. 800/319-8222. M2L, New York City. **CIRCLE 209**



▲ Mediterranean welcome

Milliken Carpet, Commercial Markets, offers two new 36-inch-by-36-inch Image Tiles inspired by the look of woven and braided raffia, a fiber from a Mediterranean palm. Raffia Tex, installed in quarter-turns, evokes the look of bamboo venetian blinds, while Raffia Ribbon provides a continuous, seamless pattern of floating crescents. Designed for use alone or together, the Raffia patterns are available in 11 coordinated colors. The Raffia collection is a tufted construction of Milliken certified WearOn nylon with a standard Comfort Plus cushion backing for improved ergonomics. All Milliken Image Tiles can be redesigned and renewed using Milliken's Earth Square program. 706/880-5511. Milliken Carpet, LaGrange, Ga. **CIRCLE 210**

► Parisian patterns

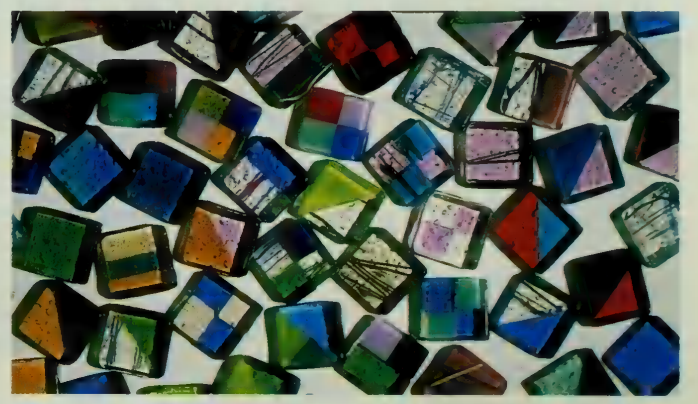
Pallas introduces Images of Paris, an upholstery textile collection by guest designer, Orlando Diaz-Azcuy. "I travel to Paris to see beauty in its most perfect state," says Diaz-Azcuy, "and I leave with indelible memories of each park, monument, and corner I have passed." Featuring patterns inspired by Parisian fashion, rivers, gardens, and architecture, the fabrics collection meet or exceed ACT standards for heavy-duty contract upholstery. 800/4-PALLAS. Pallas Textiles, Green Bay, Wis. **CIRCLE 211**

► Polished plumbing

Acorn has introduced a new line of designer basins to the Neo-Metro Collection of stainless-steel plumbing fixtures. The Metropolis Basin is manufactured out of durable stainless steel that can be ordered free-standing or wall mountable for commercial and residential use. Bowl options include the D bowl and round bowl. The pedestal design, which has polished seam welds, operates with standard plumbing trim. A concealed back access panel makes installation easy. Brush satin and "mira" high-polish finishes are available. 626/336-4561. Acorn Engineering Co., City of Industry, Calif. **CIRCLE 212**

◄ Solid foundation

Louisiana-Pacific now offers a lifetime warranty for buyers of the company's Solid Start Floor System with Top Notch oriented strand board tongue-and-groove floor panels. While limited warranties are not new to the industry, this warranty covers the whole floor system, rather than just individual parts. Solid Start and Top Notch products are manufactured throughout the U.S. 800/299-0028, ext. 707. Louisiana-Pacific, Portland, Ore. **CIRCLE 213**



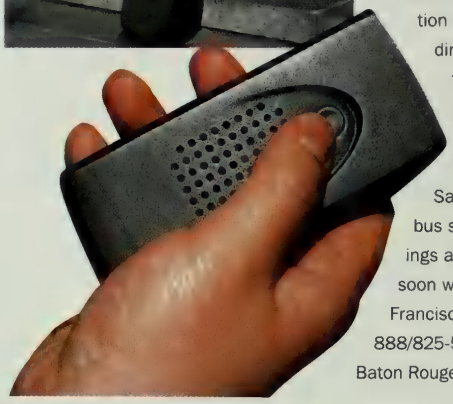
▲ Eye candy

Dolce tiles, available from Ann Sacks, are a whimsical addition to any residential wall or floor. The hand-crafted tiles feature a mix of contemporary-styled transparent and opaque glass. Dolce tiles have been hand-cut, assembled, and then fused in a kiln. Clear glass or ceramic tiles can be used to offset these bright and elevating pieces. 503/281-7751. Ann Sacks, Portland, Ore. **CIRCLE 214**

PRODUCT BRIEFS

▼ Metalizing technology

Recently patented, LuminOre is a process that is an alternative to a wide range of traditional metal-working techniques, such as plating, hot casting, forging, and sheet metal forming. The LuminOre process is cold-spray, cold-cast, or hand applied, and uses standard spray equipment and metal polishing tools. LuminOre composites contain up to 95 percent metal, provide a seamless application, and are available in six metals: copper, brass, bronze, aluminum, nickel silver, and iron. Young Electric Sign Company, Las Vegas, supplied the MGM Grand Hotel in Las Vegas with 12 Herculean sculptures (left) that feature the LuminOre system. 760/634-5474. LuminOre Inc., Encinitas, Calif. **CIRCLE 215**



► Audible signage

Talking Signs is an infrared wireless communications system that provides the visually impaired with human voice messages when the signal from a hand held remote is picked up by a Talking Sign. The system may be used wherever landmark identification and way-finding assistance are needed. For example, upon entering a lobby, the person scans the environment with the hand-held receiver. When the signal hits a Talking Sign, the receiver might detect "information desk" when pointing directly ahead and "public telephones" when pointing to the right. There are currently 800 talking signs attached to San Francisco street signs, bus shelters, and public buildings around the city, and they soon will be installed in the San Francisco Airport. 888/825-5746. Talking Signs Inc., Baton Rouge, La. **CIRCLE 216**

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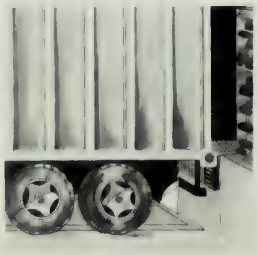

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PRODUCT BRIEFS

▼ Chemically balanced

Formica has introduced Formica Chemtop, a chemical-resistant laminate available in 20 colors and patterns that comes with a one-year limited warranty. Through the use of Formica's Chematte integral process, Formica Chemtop is resistant to a variety of harsh chemicals or strong cleaning agents that may damage an ordinary melamine surface. The integral coating produces a slightly different hue than its corresponding standard Formica brand laminate items and matte finish. Typical applications of Formica Chemtop include horizontal and vertical surfaces on lab benches, tabletops, and other work surfaces in chemical, medical, scientific, pathogenic, and photographic laboratories, as well as clinics, mortuaries, nursing stations, and other institutional uses. It can also be used in commercial or light-duty manufacturing operations. 800/FORMICA. Formica Corporation, Cincinnati.

CIRCLE 217

◄ Cooking advantage

The GE Advantium oven cooks with conventional oven quality in about a quarter of the time. Unlike other ovens, no preheating is required, so you can take food from the refrigerator to the table in minutes. The oven features more than 80 preprogrammed menus, an easy to read LED display, scroll-through cooking options, and the ability to save favorite recipes. Advantium requires no special cookware and the stainless-steel interior is easy to clean. 800/626-2000. GE Appliances, Louisville. **CIRCLE 218**

► Widening selection

With the addition of the GPI 40 and GPI 60 wide Wood I Beam joists, which feature 2½-inch-wide laminated veneer lumber flanges, Georgia-Pacific claims to offer the most extensive line of wide-flange, wooden I-joists in the nation. The new flange products complement the company's existing series of wide-flange solid-sawn lumber I-joists. 800/BUILD-GP. Georgia-Pacific Corporation, Atlanta.

CIRCLE 219

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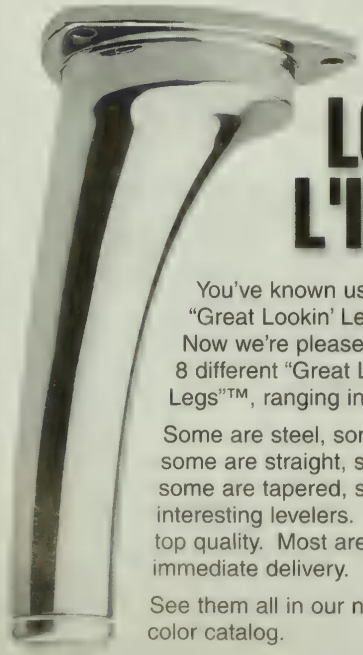
CIRCLE 77 ON INQUIRY CARD

PRODUCT BRIEFS

▲ Photogenic fabrics
Furniture, carpet, and menswear designer Jhane Barnes is the first to design contract textiles using Photo-Realism, a new advanced printing process that allows images to be transmitted directly from computer to printer, enabling photographic-quality reproduction on essentially any fabric. This technique, developed by one of the oldest printers in Japan, can print designs using up to 500 colors at once. Although it takes a full day to produce 50 yards of printed fabric, the finished product looks textural and almost three dimensional. For the collection, Barnes developed three patterns, each in two colorways. Reel to Reel features subtly gradating rectangles of color; Aperture resembles an air-brushed, fan-shaped burst of color; and Double Exposure incorporates slight variants of the same rectangular shape in an almost gridlike pattern. The collection is printed on a durable blend of 97 percent wool and 3 percent nylon. 800/922-0542. Jhane Barnes Textiles Inc., Lenoir, N.C.
CIRCLE 220

▼ Abuse-resistant panels
Fiberock brand abuse-resistant gypsum fiber panels, new from United States Gypsum Company (USG), are engineered to provide increased resistance to abrasion, indentation, and penetration for interior walls and ceilings in both residential and commercial construction.

According to USG, the fiber-reinforced panels outperform regular gypsum board in high-traffic, heavy-use applications. They are suitable for a wide range of commercial and institutional applications and can be used as an economical alternative to concrete block and plaster. For residential construction, the panels are a practical choice for areas subject to abuse, such as garages, stairwells, storage areas, and recreation/game rooms. Fiberock panels are installed and finished like regular gypsum wallboard, but, because of their higher durability and lower maintenance requirements, they can reduce life-cycle costs. The panels come in ½-inch and ⅝-inch thicknesses and 8-, 9-, 10-, and 12-foot lengths. 800/USG-4YOU. United States Gypsum Company, Chicago.
CIRCLE 221



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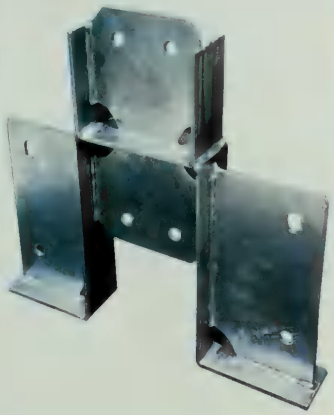
CIRCLE 78 ON INQUIRY CARD

CIRCLE 79 ON INQUIRY CARD

PRODUCT BRIEFS

► Wood framing system

The KES System, a hybrid, prefabricated wood framing system, combines the advantages of two-by-four framing, post-and-beam construction, and steel-frame erection, resulting in structures that resolve fire separation and seismic requirements while retaining the open design afforded by post-and-beam construction at a total built cost comparable to two-by-four framing. The system, which has been widely used in Japan since 1974, is being introduced now for the first time in the U.S. by Shelter USA.



Unlike traditional post-and-beam framing, the KES System utilizes prefabricated components which can be either solid sawn or engineered wood products. Prefabrication allows for simple erection in half the time of traditional framing methods. 206/522-4445. Shelter USA, Seattle. **CIRCLE 222**

▲ Control the flow

Crane Fulview Door Company manufactures custom and standard revolving doors in aluminum, bronze (muntz metal), stainless steel, and wood. Appropriate for a variety of applications, from hotels to embassies, revolving doors meet all applicable code requirements while allowing controlled ingress and egress of up to 2,400 persons per hour. The doors also save as much as 90 percent of heating and air-conditioning costs over a normal swing-door entrance, regardless of wind or stack pressure. The company produces three levels of quality for bronze and stainless-steel revolving doors. Crane offers a selection of power assisted, two-way security, and exit-only security doors. 800/94-CRANE. Crane Fulview Door Company, Lake Bluff, Ill.

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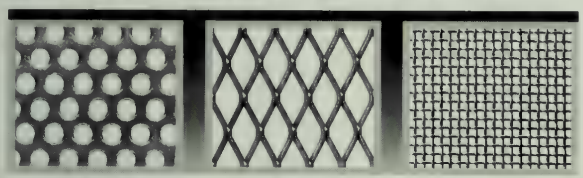

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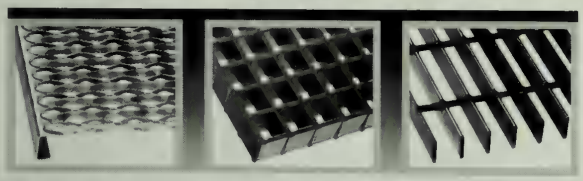

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PRODUCT LITERATURE

Enhanced lock program

An enhanced Rapidkey program, from Ingersoll-Rand Architectural Hardware's Schlage Commercial Lock Division, provides many new features including easier-to-use configuration menus. 719/264-5300. Schlage Commercial Lock Division, Colorado Springs, Colo. **CIRCLE 223**

Revisiting classic lighting

Artemide's Modern Classics catalogue features 18 luminaries from the 1960s and '70s that have been put back into production. 516/694-9292. Artemide Inc., Farmingdale, N.Y. **CIRCLE 224**

Continuous hinge line

A full-color brochure summarizes Markar Products' architectural continuous hinge line, which consists of over 100 models. 800/866-1688. Markar Products Inc., Lancaster, N.Y. **CIRCLE 225**

Quick-ship for open office

Panel Concepts' brochure presents the Turnaround 5, quick-ship program for the Prefix line of open-office systems. 714/433-3300. Panel Concepts Inc., Santa Ana, Calif. **CIRCLE 226**

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www.hubbell.com/abchance

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Ionair:
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www.aecjoblink.com

The Hardwood Council:
www.hardwoodcouncil.com

Academic furniture offerings

Thos. Moser Cabinetmakers' new brochure features a selection of handcrafted cherry furniture designed specifically for libraries and other academic settings. 800/708-9703. Thos. Moser Cabinetmakers, Auburn, Maine. **CIRCLE 227**

Continuous hinge line

Johns Manville has organized a variety of fire-stopping information, including how to use Firetemp caulk and spray, in an easy-to-use guide. 800/654-3103. Johns Manville Corp., Denver. **CIRCLE 228**

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PRODUCT LITERATURE

Sandstone brochure

A new color brochure from American Stone Corporation highlights the company's operation, products, and services. The brochure depicts some of the landmark buildings constructed of American Stone's Cleveland Quarries' sandstone. 416/656-3422. American Stone Industries Inc., Amherst, Ohio. **CIRCLE 229**

Epoxy resin surface brochure

A new six-page brochure from Epoxyn Products highlights the application of epoxy resin for laboratory work surfaces. Charts document the results of independent testing on the physical properties and heat- and chemical-resistance of Epoxyn work surfaces. 870/425-4321. Epoxyn Products, Mountain Home, Ark. **CIRCLE 230**

Wood-flooring portfolio

As part of Hartco's 1999 Elite Retailer Program, the new Sliced Cut Line Portfolio is being offered to Hartco's top dealers nationwide. Contained in an easily transportable black carrying case, the portfolio features actual wood samples of each of Hartco's eight sliced-cut products, as well as samples of all colors in the line. 214/887-2000. Hartco Flooring Co., Mount Olive, N.J. **CIRCLE 231**

Brick design software

BoralVision is new computer imaging software from Boral Bricks that allows architects to apply different brick styles and colors to design elevations with the click of a mouse. 800/5-BORAL-5. Boral Bricks Inc., Roswell, Ga. **CIRCLE 232**

Guideline for improved IAQ

A new technical bulletin that provides guidelines for the proper selection of air-filtration products in schools has been published by FARR Company. 800/333-7320. FARR Company, El Segundo, Calif. **CIRCLE 233**

Naturally inspired lighting

Meyda Tiffany has a new 28-page catalogue, *The Old Forge Collection*, which includes lighting hand-forged from steel and inspired by wildlife. 800/222-4009. Meyda Tiffany, Yorkville, N.Y. **CIRCLE 234**

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ANSWERS

Questions appear on page 176. To receive CES credits, fill in the education reporting form below or on our Web site (www.archrecord.com).

1. All model codes specify that a person must be able to open the door and exit in one simple and obvious maneuver. Any locking device must be released in that one simple operation. Additionally, the opening device must be easy for anyone to operate—usually a lever or push bar. This must be placed at the proper height. Most codes require a 32-inch clear opening, but some allow anything mounted above 34 inches to extend 4 inches into the width of the opening.

2. Door hardware is divided into eight broad categories: hinges, locks, handles, bolts, exit devices, closers, door holders, and accessories. Hinges support the weight of the door in use. Doors equipped with closers should have antifriction bearing hinges for smooth operation. Locks have three basic components: a latch bolt, a lock strike, and a cylinder. Bolts are part of the door's locking capacity, though they are independent of the lock mechanism. The bolt protrudes from the lock and holds it to the strike. The cylinder contains the springs and tumblers that allow the keys to operate. Exit devices are latches released by pressing some type of touch bar. Closers control the door movement throughout its opening and closing swing. Accessories are items added to the door, such as weatherstripping.

3. The International Building Code won't result in any substantive changes in door-hardware requirements, but it will affect manufacturers by requiring positive-pressure testing of fire-door assemblies. This new testing is done under realistic conditions—warm air builds up on the top, and cooler air stays in the bottom of the room. As a result, the top half of the door is pulled one way and the bottom half the other, with a neutral pressure plane in between. Doors must stay latched under these conditions.

4. Discerning quality means understanding the kind of metal used, the gauge, and the finish. Heavy doors or those in high-use areas need hardware made from stronger gauges of metal. ANSI test standards determine the number of cycle tests the hardware passes. Grade one means the component has passed a higher number of cycle tests than grades two or three. There can still be subtle differences on the inside of a hardware assembly, so the best way to make a comparison is to look at an actual installation and read the warranty.

5. Door hardware products can be connected to a security system within a building, which records and monitors door use. This is called access control. Locks support the monitoring system, and hinges have space for security wiring to run through them. Electrified hardware provides the convenience of being able to lock a building by flipping a switch.

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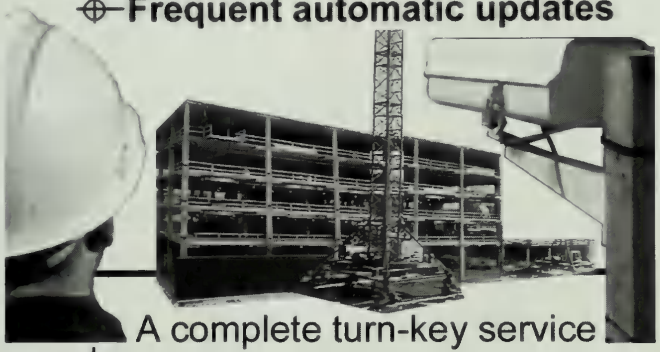

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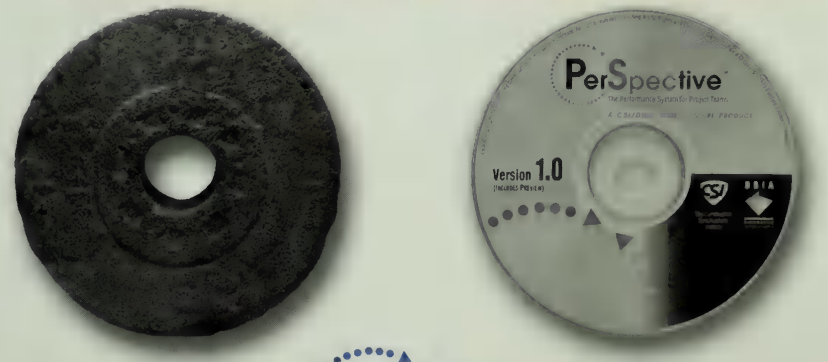

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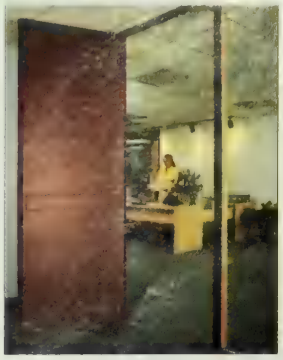

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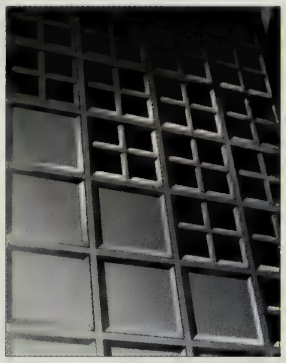

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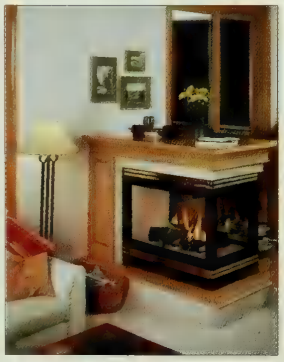

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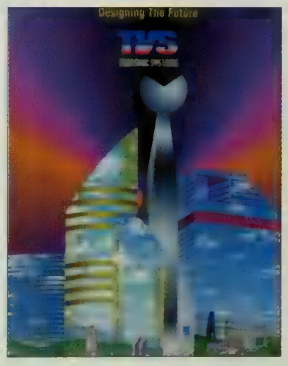

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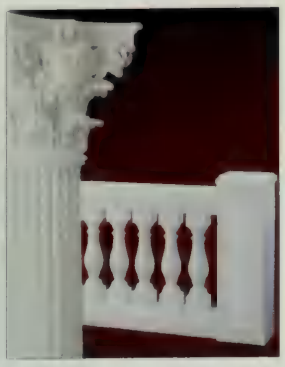

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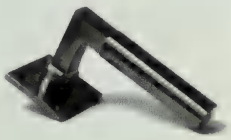

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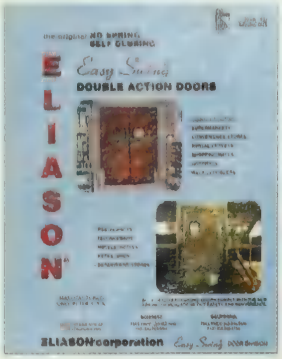

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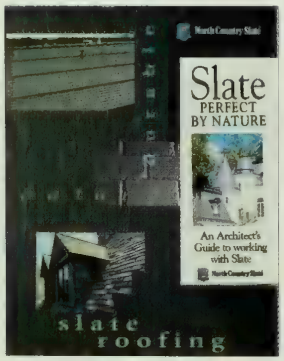

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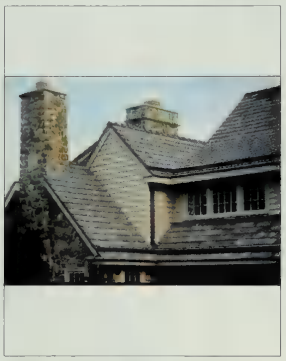

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The School of Architecture and Community Design was founded in 1986 and accredited by the National Architecture Accrediting Board (NAAB) in 1992. The School offers a Master of Architecture degree, continuing education, and a rapidly developing research program in areas including sustainable design, community revitalization, and regional ecologies. A major vehicle for this research activity is The Florida Center for Community Design and Research (FCCD&R), an interdisciplinary center whose mission is to assist the citizens of Florida in the Creation of more livable and sustainable environments. Approximately 100 students are currently enrolled in the degree program and additional planned student and program growth have been authorized. The School employs 7 full time faculty and a substantial body of experienced adjunct faculty drawn from the Tampa Bay Area. The School emphasizes architecture and community design proficiency, technical competency, and applied research that constitute a thorough preparation for practice. Its students come from diverse academic and professional backgrounds. The School has two eminent scholar endowments, one of which is configured to attract visiting faculty to enrich the program. At the present time, there are approximately 110 alumni. For further information see http://www.arch.usf.edu and http://www.usfweb.usf.edu

POSITION AND QUALIFICATIONS The Director will report to the Dean of Graduate Studies. As the chief academic officer of the School, the Director is directly responsible for overseeing all academic, administrative and fiscal operations. The School is seeking candidates who have attained distinction and can exhibit evidence of knowledge in the field of architecture and community design, outstanding leadership and management ability, and a strong sense of vision. The successful candidate for the position of Director must possess a professional degree or a master's degree in architecture, engineering, urban design/planning or related field; demonstrated record of success in teaching, research/scholarly activity and/or professional practice; demonstrated success in developing external funding and fundraising; experience in administration and strategic development of academic programs and research initiatives; active participation in professional societies; and excellent communication and interpersonal skills. Salary, academic rank and tenure are commensurate with qualifications.

APPLICATION PROCESS Send letters of application or nomination to: Dr. Graham A. Tobin, Chair, Search Committee, School of Architecture and Community Design, Office of the Provost and Executive Vice President, University of South Florida, 4202 E. Fowler Avenue, ADM 226, Tampa, FL 33620, (813) 974-4932 (office), mailto: gtobin@chuma1.cas.usf.edu

Letters of application should be accompanied by a curriculum vitae and the names and addresses of five references. References will not be contacted until advanced stages of screening, and candidates will receive prior notification.

The State of Florida has a Public Meetings Law and a Public Records Law and all university searches are conducted under the terms thereof All meetings of the Search Committee are publicly announced and conducted. All documents submitted to the Committee are treated as open material with the exception of evaluative documents specific to the performance of the faculty of the State University System of Florida.

Applications must be received no later than 5:00 p.m. EST December 13, 1999.

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CHAIR, DEPARTMENT OF ARCHITECTURE
HOWARD UNIVERSITY
SCHOOL OF ARCHITECTURE AND DESIGN

The School of Architecture and Design in the College of Engineering, Architecture & Computer Sciences at Howard University invites nominations and applications for the position of the Chair of the Department of Architecture offers an NAAB accredited five-year program leading to the Bachelor of Architecture degree. The masters degree programs are currently in the process of redevelopment. The Department consists of 20 full and part time faculty, and currently enrolls over 200 students and is expected to grow. The successful candidate must be highly motivated and is expected to take full advantage of the University's resources and foster collaboration with the departments of allied disciplines and research programs. Howard University is a comprehensive, research oriented, historically black, private University with a truly global perspective. Fully accredited by the Middle States Association of Schools and Colleges, the University has a faculty of 1,200 and a student body of 11,000, and is one of only 88 universities nationally to be designated a Level One research university by the Carnegie Foundation for the Advancement of Teaching. The College of Engineering, Architecture and Computer Sciences, one of the 12 major academic units of the University, consists of two schools: the School of Engineering and Computer Science, and the School of Architecture and Design. The Chair is expected to provide intellectual leadership to the department, promote the development of a shared vision of academic excellence, facilitate cross-disciplinary interactions with faculty in the other departments of the College, and represent the Department to the academic community at large. The Chair is also expected to provide leadership in the development of new programs and concentrations. Candidates should hold a professional degree in architecture and must have an established record of creative and professional works, noted achievements in research, teaching and mentoring in a culturally diverse environment, demonstrated interests in scholarly achievement in research and service, and effective management and interpersonal skills. Candidates must qualify for a tenured associate or full professorship in the Department of Architecture. Candidates are asked to submit: a letter of interest, a curriculum vitae, examples of creative and scholarly works, and names, postal addresses, phone/Fax and e-mail addresses of at least three references no later than the extended deadline of November 30,1999. Questions regarding this position may be directed by e-mail to glakpe@cldc.howard.edu. Submit applications and nominations directly to Professor Emmanuel Glakpe, Architecture Search Committee, College of Engineering, Architecture and Computer Sciences, Howard University, 2300 Sixth Street NW, Washington, DC 20059. Howard University is an affirmative action, equal opportunity employer.

DEAN, COLLEGE OF ARCHITECTURE, DESIGN, AND CONSTRUCTION

Applications and nominations are invited for the position of Dean of the College of Architecture, Design, and Construction, Auburn University, Alabama. The College of Architecture, Design, and Construction is a multi-disciplinary College comprising Architecture, Industrial Design, and Building Science. Opportunies: The combination of disciplines in Architecture, Landscape Architecture, Interior Design, Industrial Design, and Building Science provide the potential to achieve increased national prominence. The College attracts an exceptional student body. The College enjoys excellent working relationships between College alumni, practicing professionals, and industry in each discipline.

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FACULTY POSITIONS AVAILABLE

The College has established nationally recognized outreach and research programs, such as: Auburn Rural Studio, Newbern, Alabama. Urban Studio, Birmingham, Alabama. Product concept development for Brother International. Space station related concept development for NASA. Birmingham Construction Industry Authority. Construction Information Technology Initiative. College has in-place funding support to become nationally prominent in Information Technology. The College has 44 full-time and 10 part-time faculty, approximately 1,200 undergraduate and 30 graduate students. Undergraduate programs are offered in the academic areas of Architecture, Building Science, Industrial Design, Interior Design, and Landscape Architecture. Graduate programs are offered in Building Science, Community Planning, and Industrial Design; a Master of Landscape Architecture will be offered beginning fall 2000. The Dean is the chief administrative officer of the College interacting with the University, and is the College liaison to the design and construction industries. Responsibilities include: 1) collaboration with a diverse faculty to articulate and implement a vision for the College; 2) providing leadership and guidance to enhance creative research projects; 3) developing and supporting funding opportunities; and 4) identifying and providing resources that support and enhance the quality and effectiveness of instruction. Qualifications: Must possess an appropriate terminal degree in one of the disciplines represented by the College and qualify for appointment as a tenured professor in the College. Must have demonstrated collaborative leadership, managerial, and communication abilities. Must have ability to foster collaborative relationships within the College and among the University's other academic programs. Must have capacity to facilitate working relationships with alumni, professionals, and organizations in the design and construction industries. Must have demonstrated administrative and budgetary skills. Must have commitment to fundraising and development to advance the College. Must have commitment to diversity among faculty, staff, and students. Established in 1857, Auburn University is a comprehensive land-grant university accredited by the Southern Association of Colleges and Schools. Within the College, the Architecture program is accredited by the National Architectural Accrediting Board; the Building Science program by the American Council for Construction Education; the Industrial Design program is accredited by the National Association of Schools of Art and Design; and the Landscape Architecture program by the Landscape Architecture Accrediting Board. Salary: Commensurate with training and experience. Review Date: Review of applications will begin December 1, 1999, and continue until a qualified candidate has been recommended for appointment. To Apply: Submit a letter of application, curriculum vitae, and a list of five references (name, address, phone and fax number, and e-mail address) to: Dean Richard Brinker, Chair, Search Committee, School of Forestry, M. White Smith Hall, Auburn University, AL 36849-5418, Phone: (334)844-1007, Fax: (334)844-1084, E-mail: brinker@forestry.auburn.edu. Auburn University is an EO/AA Employer, Applications from Minorities and Women are Encouraged

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UNIVERSITY OF WASHINGTON

Dean,
College of Architecture and Urban Planning
University of Washington

The University of Washington invites applications and nominations for the position of Dean, College of Architecture and Urban Planning.

The College is located on the Seattle campus and consists of four departments: Architecture, Construction Management, Landscape Architecture, and Urban Design and Planning. There are 55 faculty members, 38 part-time lecturers, and 600 students (upper division and graduate). Degrees are offered at undergraduate and graduate levels, and there are several certificate programs. The College conducts international study programs, including management of the University of Washington Rome Center in Rome, Italy. A more comprehensive description of the College of Architecture and Urban Planning is available on line at http://www.caup.washington.edu/

The Dean is the College's leader, liaison to the outside professional community, and its chief administrator. The Dean must be able to work with the faculty, students, staff, University administration, and with related professionals to guarantee that the challenges of undergraduate and graduate education, faculty research, and service to the state and local community are met with vision, vigor, and integrity.

The University of Washington has a strong commitment to diversity. All applicants should have an outstanding academic and/or professional background, with conspicuous evidence of talent for leadership and management.

Please send nominations and applications, including letter of interest and vita, to the address listed below. Review of applications will begin December 1, 1999 and will continue until the position is filled.

Advisory Committee on the Deanship of the
College of Architecture and Urban Planning
Patricia W. Wahl, Chair
University of Washington, Box 357230
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E-mail: wahlcaup@u.washington.edu
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DEPARTMENT OF ARCHITECTURE
UNIVERSITY OF OREGON

The Department of Architecture at the University of Oregon seeks applicants for three tenure-track appointments at the assistant professor level. Candidates with exceptional qualifications may be considered at the associate professor level. These appointments begin September 2000. Available positions are: 1.) Architectural Design + Special Theory. Seeking a candidate with exceptional studio teaching abilities to teach architectural design studios + courses in spatial theory such as spatial ordering/composition and typology, and/or design theory and criticism. The normal teaching load will be five courses per academic year (three quarters) to include an architectural design studio each term. 2.) Architectural Design + Environmental Control Systems Seeking a candidate with highly effective studio teaching abilities to teach architectural design studios + lecture courses on environmental control systems, and teaching related advanced seminars. A strong interest in the relationship between environmental systems and architectural form is desired. 3.) Architectural Design + Urban Theory. Seeking a candidate with exceptional studio teaching abilities to teach architectural/urban design studios + courses in urban theory/principles or related subject areas in the U of O's Portland Urban Architecture Program. The urban architecture program is a fast growing program in one of this country's most progressive and dynamic cities. Of the 600 students in the UO architecture department approximately sixty students (with a fully accredited graduate degree program) are enrolled in Portland. In addition to conducting research, creative activity and scholarship, the successful candidate will be expected to teach and provide service primarily in Portland, but as with other Portland-based faculty, some service and occasional teaching in Eugene is expected. In addition to the tenure-track appointments, we also seek nominations and applications for two one-term distinguished visiting professor positions: The Frederick Charles Baker Professor in Lighting and Architectural Design and the Pietro Belluschi Professor in Architectural Design. Applications must hold appropriate advanced degrees with teaching, research, and practice and/or practice experience. Full position descriptions, applications and related information are available from Nancy McNaught at (541) 346-3656. Additional information about the Department of Architecture is available on our web site at www.architecture.uoregon.edu. To apply, forward a curriculum vitae, statement of interest, names of three referees and no more than 10 pages of representative research/creative practice to the Faculty Search Committee, Department of Architecture, 1206 University of Oregon, Eugene OR 97403-1206. None of the above materials will be returned. To assure full consideration, applications must be received by December 1, 1999. Positions will remain open until qualified candidates are identified. The University of Oregon is an AA/EO/ADA institution committed to cultural diversity. Women and minorities are strongly encouraged to apply.

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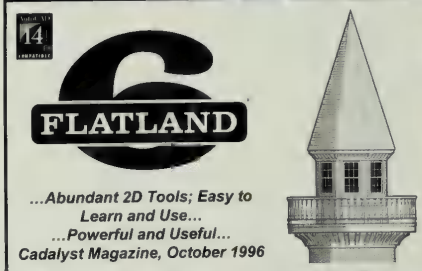

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C

THE FUTURE Biofiltration could become an effective means of combating poor indoor air quality.

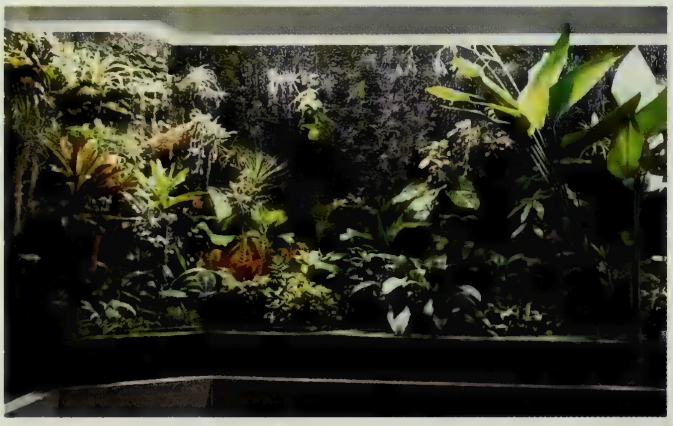
BY KIRA L. GOULD

According to the U.S. Environmental Protection Agency, at least a third of new or renovated buildings have indoor air quality (IAQ) problems. Future solutions, some researchers believe, may lie in living systems—"breathing walls" built into the interior architecture—which mimic the natural air filtration process or "biofiltration" performed by plants and other organic matter. These ideas are becoming increasingly important as awareness of IAQ issues grows and associated costs mount. People working in buildings with particularly poor IAQ report headaches, red eyes, and lethargy, symptoms that have become known as sick building syndrome. Studies show that resulting health-care costs reach nearly $30 billion annually, and absenteeism and productivity losses may account for another $100 billion.

Poor IAQ is generally caused by emissions from the materials (and people) in buildings. When trace amounts of formaldehyde emissions from one product mix with trace amounts of other chemical emissions, including smoke and perfume, the unpredictable result is a cocktail that can be offensive to many people (and potentially dangerous to those with even mild chemical sensitivities). Compounding the problem, since the 1970s buildings have been sealed tightly to limit energy costs. Architects have begun to tackle poor IAQ by selecting building materials and furnishings that emit fewer volatile organic compounds, and this is helping in many cases. But additional measures are necessary.

One tactic is to increase air exchange. Philadelphia's Sheraton Rittenhouse Square Hotel (right) calls itself the country's first "environmentally smart" hotel. According to Barry Dimson, CEO of EcoSmart Healthy Properties, a consultant on the project, fresh and filtered air is pumped into guest rooms at a rate of 100 cubic feet per minute. Every half-hour, approximately 70 percent of each room's air is replaced.

Using plants to clean the air is another option. Oxygen production has long been touted as an ancillary benefit of house plants. But to increase the scale at which such solutions can be effective, researchers and inventors are now trying to bring biofiltration itself, not just plants, indoors. As a NASA environmental scientist, Bill Wolverton worked toward developing ecological life-support systems for space habitats; since retirement, he has directed research toward solving environmental problems on this planet. Wolverton has shown how bringing together plants, with their root-associated microorganisms with filtering capabilities, and mechanical air movement can improve IAQ in larger spaces than space habitats, and perhaps whole buildings. The systems are water-based, so they are not prone to the growth of mold spores sometimes associated with soil use.



Wolfgang Amelung, a biologist and "experimental engineer," has taken biofiltration further. Amelung, the owner of Genetron Systems in Toronto, stresses that he designs "high-order ecosystems. When there are enough pieces, the system becomes self-organizing and self-correcting. This is difficult to embrace in the context of Newtonian thinking because it is not mechanical. This is the beginning of organic technology."

Amelung created the Environmental Room at Canada Life Assurance Company's Toronto office (center). This 80-foot indoor air biofilter, sort of a life-size terrarium without the glass, includes hundreds of species of plants, water, rock, frogs, fish, insects, and a "scrubber" made of fiberglass panels faced with porous lava rock. The panels, wetted by circulating water and covered with moss, make up the "breathing wall." An air handler draws air through the scrubber and hydroponic region and then into the HVAC system and pushes it back into the room. "Spores are attracted to the system, so they don't float around," Amelung says. "And microorganisms are good at breaking down minerals that we prefer not to have in the air." The University of Guelph's Department of Horticultural Science is studying the Canada Life project; in the five years since installation, tests have recorded no negative byproducts, such as spore build-up or unpleasant odors.

Joe Miriam, CEO of Club Monaco in Toronto, heard of Amelung while he was puzzling over employees' complaints about headaches and red eyes. Amelung designed a 40-foot-square, passive breathing wall for the company in a large central atrium not linked to the air-handling system. Although no conclusive air-quality studies have been performed, the aesthetic and acoustic benefits have exceeded expectations, says Miriam.

To tackle a whole building's IAQ, Amelung proposes setting up a network of different-sized systems throughout the facility. He hopes to have the opportunity to test this idea soon. In the meantime, perhaps we should go back to designing offices with operable windows.

Kira L. Gould is a freelance writer living in New York.

Advertisement

Are You Moving Fast Enough?

by Charlie White, AIA

With computers, as in race cars, faster is always better. A high performance computer is made up of high performance parts; high speed RAM, fast hard drives, and powerful video cards to name a few. But the most important factor has always been the CPU, the central processing unit. Historically, Intel has been the undisputed champion of high speed processors. Its 600 MHz Pentium III is the latest in a long line of record-breaking speedsters.

Now, a new contender in the processor wars, AMD's Athlon K7, is enough to make even the most diehard Intel fan sit up and take notice. For the first timean Intel competitor is offering a faster x86 processor. Recent independent benchmarks show the 650 MHz AMD Athlon beating the fastest Pentium III by an average of nearly 17 percent. Intel has responded by lowering the cost of its Pentium III line by an average of 43% and will release its 700MHz Coppermine CPU about the time you read this article.

Does this race for processor speed affect the average architect? You bet. In fact, as architects become more and more automated, the computer continues to evolve as a core element of their business. This evolution is fundamentally changing the work of the architect. Ultimately, the most important result of this race between Intel and its rivals will be incredible new software tools that will show up on our desktops. These capabilities will only be possible with the advanced processing power of these new CPU's.

Fortunately, due to the intense competition between manufacturers, the price of performance continues to fall. A relatively small investment can lead to huge increases in productivity. Our office has experienced a performance gain of at least 60% from our computers over the past 18 months. The truly phenomenal part is that our cost for the computers has gone down. There is no other part of our business infrastructure that even compares with that efficiency.

Architectural firms can't afford to get behind the technology curve. With the large sums of money at stake in architectural projects, it only makes sense to use the most productive tools available. As the list of recent computer acquisitions on the right indicates, in our office we tend to buy a new computer every 90 days. This small investment has paid off in higher productivity and capabilities we simply would not have otherwise. As application technology expands to include real-time 3D modeling, Internet collaboration and distance learning, it will be crucial to have the best hardware and software for the task.

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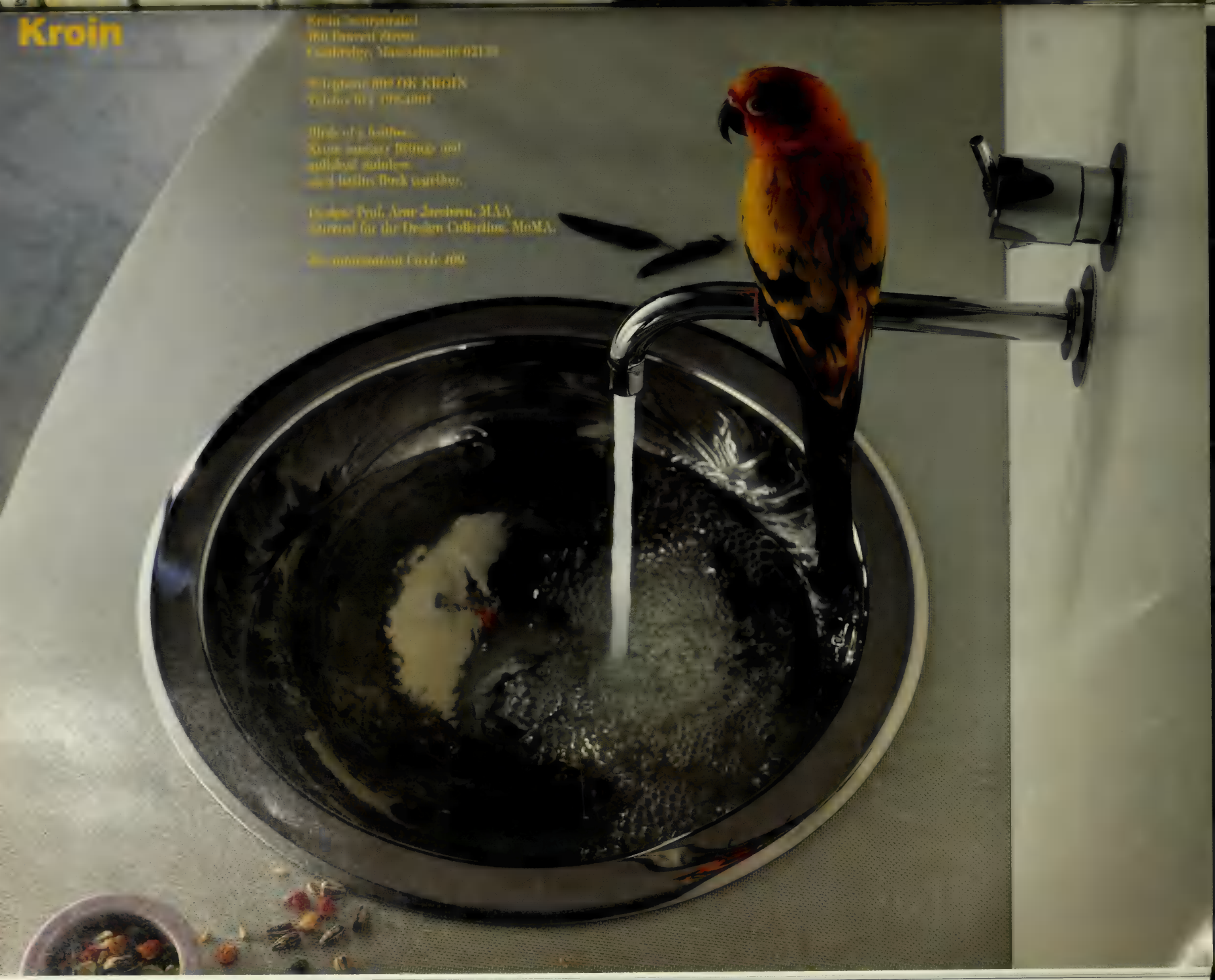
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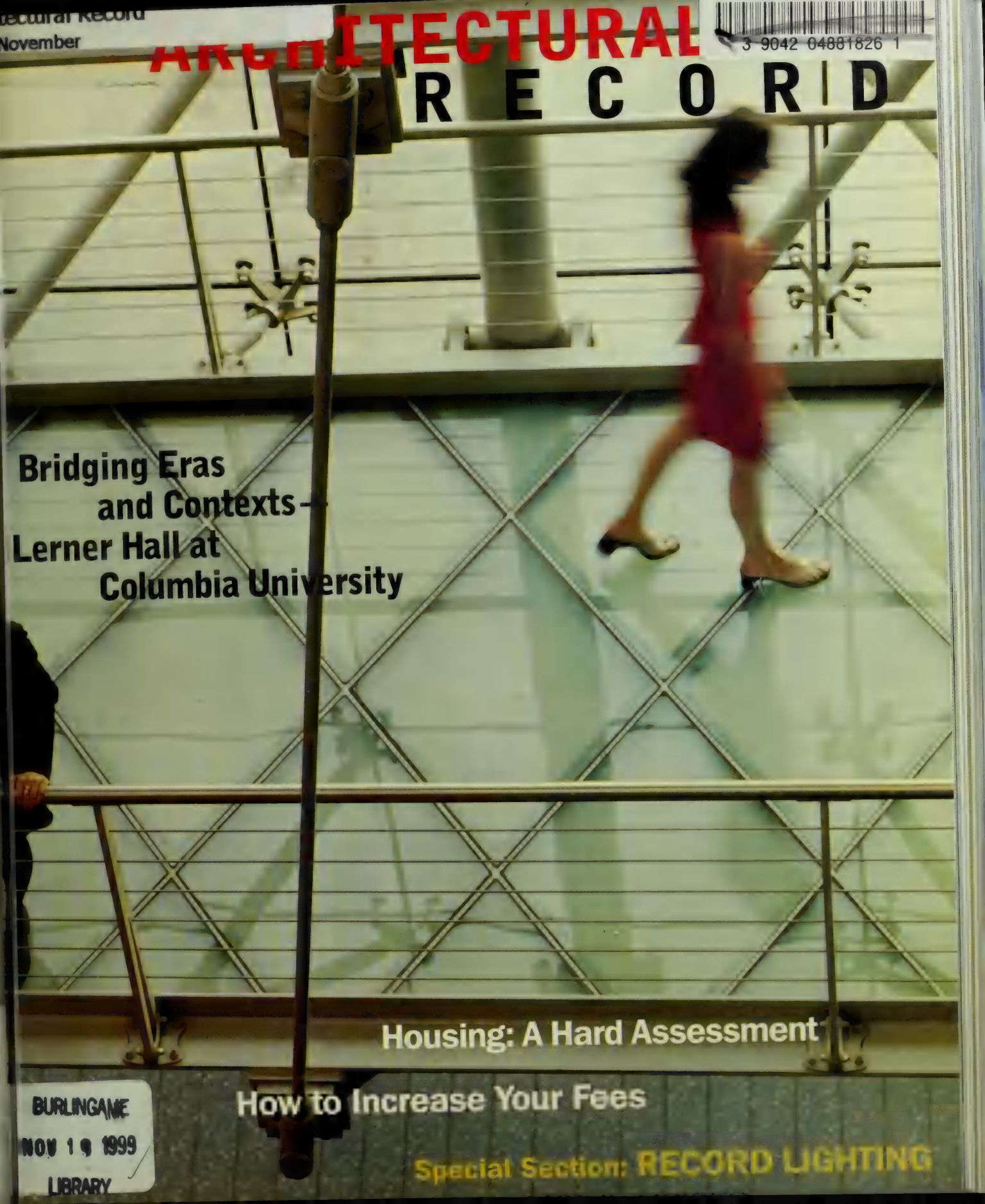

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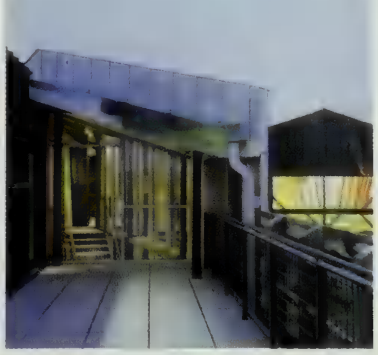

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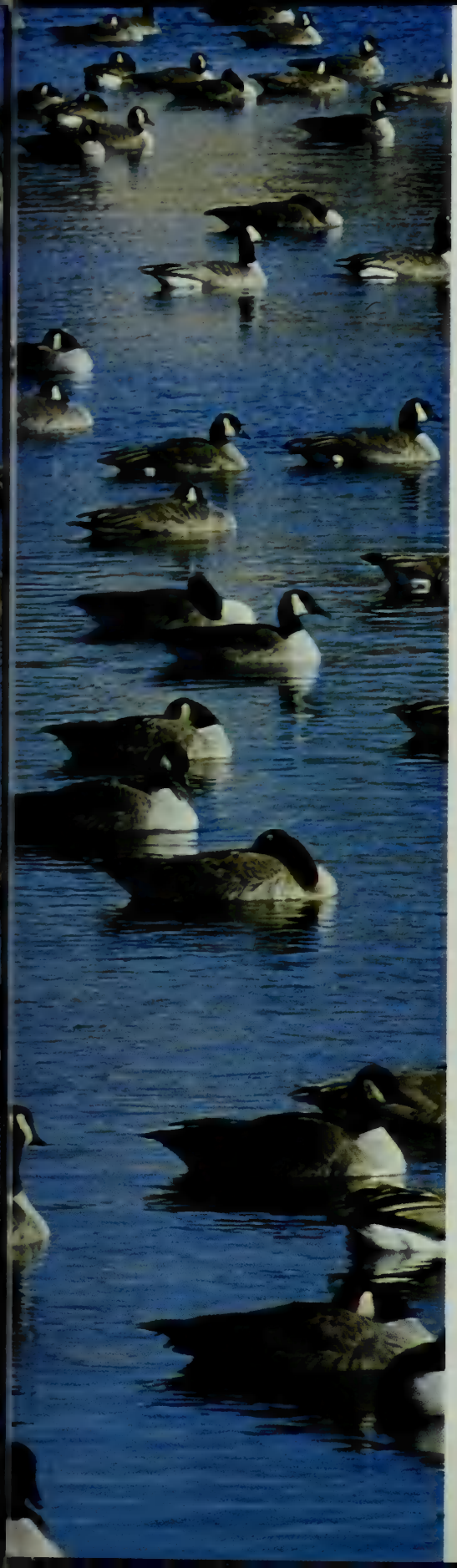

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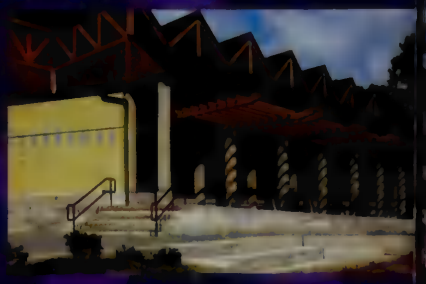

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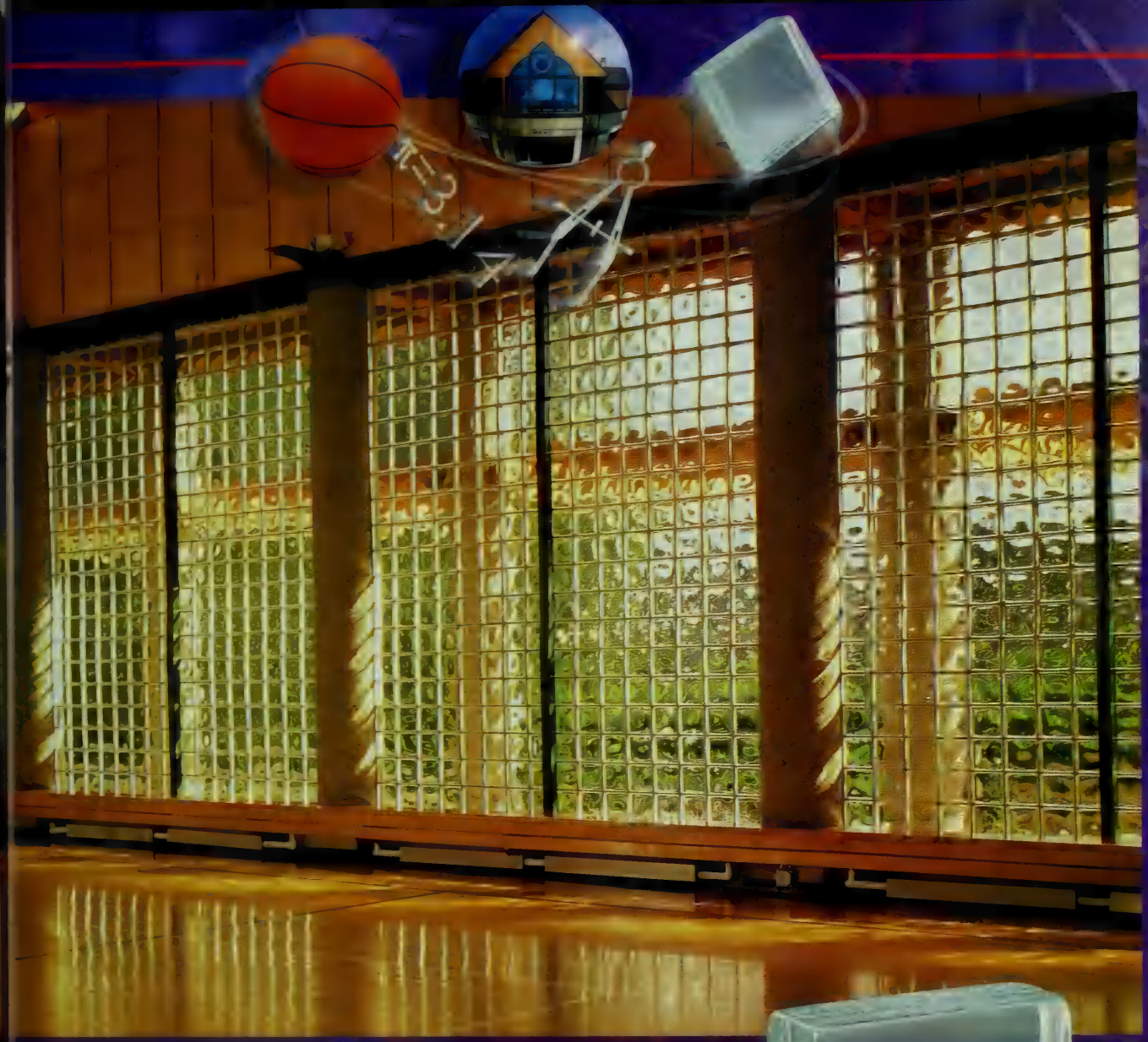

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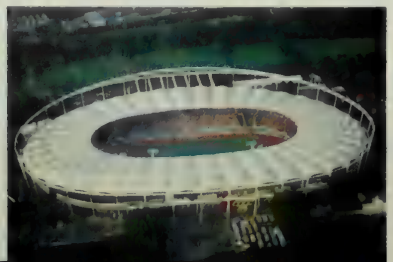


EDITORIAL

Who Speaks for Architecture?

BY ROBERT A. IVY, FAIA

The public doesn't understand architecture. They find the subject overly technical, difficult, or esoteric, we are told, and therefore fail to realize the value it brings to our daily lives. In fact, most people experience architecture as immediately and directly as running along Chicago's lakefront or walking into a school lobby. Architecture surrounds us, protects us, and sometimes makes us mad. Why, then, do we say so little about it outside of professional journals?

Traditionally, newspapers have assumed the role of forum, employing critics who sparked conversation that rebounded across the country in city halls and around kitchen tables. With the exception of a few major metropolitan areas, however, newspapers have shunted aside meaningful architectural criticism, replacing it with "lifestyle" stories tinged with blandness or relegating all building to the real estate section, as if controversy might anger readers or advertisers. We are poorer for their retreat.

Other media offer little comfort. The paucity of meaningful discussion about the public realm comes at an ironic moment when newsstands are exploding with niche publications related to the quality of private life, from Martha Stewart and the shelter magazines to carpentry. Except for Charlie Rose, *television presents an array of feel-good and how-to programs, but they are home-centered. Web sites, sprouting out of thin air, offer an energetic, democratic alternative, but the unedited content can be merely cranky or verbose.*

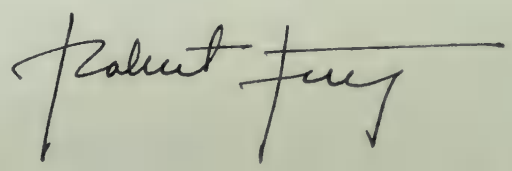
Who then takes up architecture's mantle in the larger society? Relatively few institutions disseminate information about the subject. Aside from schools of architecture, art museums have been lonely standard bearers, producing exhibits such as the provocative "Unprivate House" exhibit at MOMA earlier this year. They have been joined by a handful of organizations, such as the National Building Museum and the American Architectural Foundation, engaging architecture as a core topic for widening audiences.

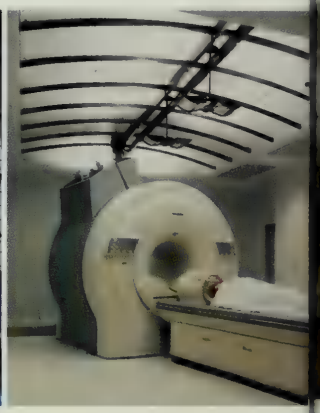
We can look to Canada for a model, where, unique among institutions, the Canadian Centre for Architecture (CCA) in Montreal sets an ambitious agenda for excellence. Child of the individual vision of founding director and patron Phyllis Lambert, this remarkable museum and study center celebrates its 20th anniversary in November. With unerring aim, fierce intelligence, and personal resources, Lambert has created a home for architecture in Montreal that is broadening and maturing into an enviable international institution.

From its signature building on the rue Baile, the CCA operates at three levels: locally, as a resource for Montreal; nationally, as a focal point for Canadian architecture; and internationally, through publications and exhibitions of architecture, urban design, and landscape studies. Respected scholar Kurt Forster has assumed Lambert's former role as director, overseeing burgeoning programs and extraordinary collections in architectural photography and drawings.

It is stirring public debate. Recently, the IFCCA, the fund-raising arm of the organization, sponsored an invited competition to reconceive a swath of Manhattan's West Side from Eighth Avenue to the Hudson River, an effort ultimately won by architect Peter Eisenman. The point of the exercise was not actual redevelopment but enlightenment, a high-minded civic engagement to provoke conversation about the future of the city. After widespread coverage in the media, the results of the competition were recently mounted in Grand Central Terminal, where legions of the public, those persons who supposedly don't understand architecture, will pass by and see for themselves.

Happy birthday, CCA. Thanks for 20 years of high standards, a point of view, and for trusting the public with the strongest and most challenging of our ideas. We need spirited discussion, more coverage in the general media, and more vital resources like you.





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CIRCLE 11 ON INQUIRY CARD

LETTERS

Keeping it real

I'd like to relate an anecdote about the impact ARCHITECTURAL RECORD had on a client. My firm has been developing a nine-story office building, for which we presented several different concepts. Our favorite was a box defined by a series of masonry columns and panels. Over this box a series of glass plans floated—at times in front of the masonry and in other places behind the frame. It was a scheme that depended on the transparency of the glass to illuminate the underlying structure.

We kept developing the project, reducing the number of schemes at every presentation. Despite the preference for more conventional approaches by the developer, we kept "our" scheme alive.

Recently, we had another design meeting. Walking in, we were prepared for another battle to save our design. But the developer dragged out ARCHITECTURAL RECORD and pointed out the two Herzog & de Meuron buildings [August, page 82]. He gave us a look that said, "Now I get it."

Thanks for performing an invaluable service to our design work.

—Joseph Valerio, FAIA
Valerio Dewalt Train Associates
Chicago

Hey, leave those schools alone

Regarding "Back to School" [September, page 112], what frustrates me most about the critics of architectural education is the presumed responsibility they place on the architectural academy to produce profession-ready graduates. This has never been the role of our accredited programs in colleges and universities nor should it ever be.

It is the role of the academy to create critical thinkers equipped with the sensibilities and skills to become architecturally minded problem solvers. Such a position on the part of the academy has not only yielded incredibly capable aspiring architects, but also capable individuals who ultimately pursue sibling design disciplines.

The profession must realize its role and take responsibility to educate recent graduates and interns. (The IDP program, at least in principle, is indicative of this realization.) It would not surprise me if these same critics of architectural education are practitioners unwilling to mentor recent graduates in the name of greater office efficiency and maximum financial profitability.

One must remember that architectural education is the result of both our discipline's academy and profession, together. Each serves a different role and, as such, teaches the future architect in different yet equally beneficial ways.

—Chris Ford
Richard Meier & Partners
New York City

Scholarship down

Your article on the state of architectural education [September, page 112] reminded me of teaching site planning at the Pratt Institute. A curriculum committee made up of almost entirely unlicensed, nonpracticing architects decided to get rid of the required course.

There would be no instruction at all in the undergraduate program about environmental issues, zoning, or site infrastructure that architects face every day. One member of the committee thought site planning meant planting trees after a project was completed. I guess we might as well get used to the fact that academics will always control what's taught in architecture schools.

—Charles Belfoure
Westminster, Md.

History never repeats

Your August news story "Paul Allen Stakes a Claim on an Old Seattle Neighborhood" [page 57] underscores the problem that historic districts are experiencing. Our architectural heritage is under pressure

YOU THINK YOU HAVE THE COLD HARD FACTS.

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from quick-buckers, short-sighted developers, and inexperienced designers. Why was it necessary for Allen to have a super modern facade in a period neighborhood? Is it ego, chutzpah, or ignorance of what a historic district entails that rammed an out-of-context edifice down the throats of Seattle's citizenry? Shame on Seattle's leaders for not living up to their mandate and allowing this to transpire and shame on ARCHITECTURAL RECORD for celebrating it.
—William Kahn
Architectural Renaissance
Watertown, Mass.

Nostra-dome-us

The story "Retractable Roofs: The Cutting Edge" in your August issue [page 112] mentioned the technological advancements of American facilities, but there was no mention of the Skydome in Toronto, which predates all these by 10 years and is still a first-class facility for sports and entertainment. It would have been relevant to show how these locales compare to the Skydome in style and design, because they are all reinventing the wheel when it comes to domes.
—Andrew Robinson
Toronto, Ontario

Leave criticism to clients

Your September Mentors column [page 28] by Andy Pressman and the article on Education ["Back to School," page 112] struck a chord with me. In my opinion, both missed the fundamental essence of what we do as architects and how we should be educated.

What our firm's clients think about us, and their praise or criticism, means a lot more than the opinion of other architects and the esoteric elitist opinions of academics that have never had to meet a payroll or deal with building code officials. Neither the column nor the article discussed the relationship between architects and clients in a meaningful way. The answer to "Why do clients hire architects?" is a fundamentally important question that should shape the education, career, and practice of an architect and his or her firm. We deal with this every time we submit a proposal and go to a selection interview. It may sound simplistic, but we think clients generally hire architects because of their reputation for exercising good judgment in three areas of planning logic, i.e., functional, economic, and aesthetic. Every decision we make about a project falls into these three categories. This is not an easy way to practice architecture, but it is an effective way to structure the need for "self-criticism" discussed in the column. Professional egos, a craving for critical acclaim, and insensitivity to our client's objectives will prevent this magical process from happening.

I have been a licensed architect for 40 years and a partner in my own firm for 20 years. I know that this process works and that it is an incredibly satisfying way to practice our wonderful profession.
—Tom R. Glover, AIA
Oklahoma City

Andy Pressman, AIA, replies: I greatly appreciate Mr. Glover's sensitivity in valuing the opinions of his firm's clients. There was no intention, however, to address the issue of architect-client relations in this column. If Mr. Glover is interested in pursuing my analysis of the topic further, I would recommend my book The Fountainheadache: The Politics of Architect-Client Relations *[Wiley, 1995]. This volume describes the importance and potentials of evolving relationships between architects and clients and concludes with recommendations for architectural education in professional practice and design studios.* ■

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CIRCLE 12 ON INQUIRY CARD

SPEAK OUT Architects and planners concerned about the spread of sprawl should pay close attention to Portland.

BY TED KATAUSKAS

Ted Katauskas is a writer with an interest in alternative architecture. He is based in Portland, Ore.

Everyone is talking about sprawl. Al Gore invokes its menace in his proposed "smart growth" initiatives. The topic promises to figure prominently in the next presidential election (last November, voters approved nearly 200 state and local antisprawl ballot measures). Cities across the country are proposing growth boundaries. But how can architects follow through on these well-meaning ideas? All eyes should turn to Portland, Ore.

Gary Reddick, chief executive of local firm Sienna Architecture Co., has built a practice around high-density development in Portland, a city that's had an urban-growth boundary in place since 1973. As other cities erect growth boundaries, forcing developers to redirect their focus from suburbs to inner cities, it will become increasingly critical for architects to find innovative ways to plug "holes in the urban fabric," as Reddick puts it. "Cities are finally realizing that in their rush to get out to the edges, they've left a lot of parcels either undeveloped or underdeveloped."

Not so in downtown Portland, where the laserlike focus has been on the inner city for more than a quarter century and the greatest architectural challenge is to find new space in a tight context. Reddick is something of a whiz at it. Not long ago, while driving through Northwest Portland, an upscale inner-city neighborhood populated mostly with Victorian single-family homes, Reddick spotted a 100-by-200-foot parking lot outside a small medical building and envisioned a 60,000-square-foot, four-story condominium complex with underground parking. To help convince the hesitant property owners that his vision made sense, Reddick's firm agreed to put off full payment for its services until the project was completed and the first 10 units were sold. And to satisfy the locals' desire to preserve scale, Sienna faced the condominium with a row of less intrusive two-story townhouses.

"A surface parking lot is an antiquated way of thinking, a suburban manifestation," explains Reddick. "We're looking for sites like these and developing them, so the doubters can touch and feel them and say, 'So this is how you do density.' As cities densify, architects need to lead the way not only as designers, but also as educators, coercers, counselors, wringers of hands, and sometimes developers."

An eye for experimentation

Reddick admits his firm's 20-odd high-density projects in progress are "reality-based," and "hardly experimental," due largely to the fact that they involve more bureaucratic haggling and financial risk and cost more to design and build than traditional structures. But at Portland State University, Clive Knights, an associate professor of architecture who teaches undergraduate seminars on high-density design, delights in allowing students the luxury of dismissing such concerns. As a result, Knights says, he sees forward-looking, high-density designs that practical-minded professionals like Reddick might not have considered.

Recently, Knights had students design detached three-bedroom, two-bath speculative single-family homes that could be built on lots as small as 25 by 100 feet—lots often left undeveloped because they are either deemed unsuitable for condominiums or too small for the scale of single-family homes found in developers' plan books. The submissions ranged from Charles Duncan's utilitarian Datum House, a two-story starter home designed to be built in increments, to Zeljko Grahovac's schizophrenic Module House, a three-story cylindrical lodge connected via an outdoor staircase to a ziggurat-like rectilinear studio and garage.

"In Portland, if you weren't doing four- or five-story condominiums or rowhouses with big garages, there was nothing in between," observes Knights. "There needs to be much more exploration of what can be done. The fact that Portland has legislated that it will grow through densification rather than expansion makes this city an ideal laboratory for the architecture of future urban development." ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk) to Speak Out, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.architecturalrecord.com and clicking on News/Features/Dialogue. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive text approval.*

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Circle No. 13

MENTORS Good architects approach each challenge with a project-specific solution. Client contracts can be dealt with the same way.

BY JOSEPH DI MONDA

Joseph Di Monda, AIA, has a bachelor of architecture degree from the City College of New York and a law degree from the Southwestern University School of Law. He runs a private law practice in Manhattan Beach, Calif., and can be reached at JDAIA@aol.com.

As architects, we take pride in designing custom solutions to building challenges, rightfully emphasizing project-specific solutions over one-size-fits-all answers. Nevertheless, we often rely on standard form contracts to define our relationships with clients. Instead, we need to recognize that the first step in the design process should be a well-drafted owner-architect agreement unique to each project.

The construction industry is constantly evolving. Increasing site-acquisition and construction costs have amplified the magnitude of risks. Owners are sophisticated and retain a plethora of experts—from real estate consultants to project managers—to help them understand and deal with these risks. The owner-architect agreement should allocate such risks accordingly; after all, the owner benefits from the project's long-term appreciation and cash flow long after the architect's work is completed.

Architects should consider and negotiate for a clause that limits the architect's liability to a predetermined amount, usually based on the design fee. While some clients may not initially agree to such language, a candid discussion detailing the allocation of risk and its relation to potential profits is often all that is required to convince them. Because the client stands to profit from the project, the client should bear the risk. There are several issues related to a liability-limiting clause that vary from state to state, so be sure to review details with an attorney.

Waiver clauses can also limit the architect's liability. Architects are under increasing pressure to find new methods and materials to decrease construction costs and, therefore, should negotiate a waiver of all claims that arise from the architect's specification of new or innovative construction materials and assemblies. The risks associated with the use of new materials may be unknown, but the architect may still be found to have breached the standard of care if those new materials and assemblies fail to perform as expected.

Once again, the owner—not the architect—stands to benefit from the short- and long-term savings associated with the use of new materials, making it reasonable to bargain for a waiver of any damages that may result as a consequence of the owner's desire to reap the potential benefits associated with the use of new technology.

A waiver clause should extend to all disputes rising from the architect's reliance on products provided to the architect by the owner's consultants. While the standard AIA B-141 contract states that the architect may rely on owner-provided information, it is silent as to who is responsible in the event that the information is inaccurate.

Custom fittings

The AIA contract is a great place to start any negotiation. But it can also be a jumping-off point. For instance, the most recent AIA B-141 binds the architect to maintain the confidentiality of the owner's information. While this does not shift risk directly associated with the project to the architect, the ambiguity of the clause could leave the architect exposed to litigation by an overzealous owner. For example, may an architect provide design services for competing developers? If so, would the work have to be conducted in different parts of the architect's office, using different staff? Because the confidentiality clause's operation is open to interpretation, consider deleting it from the agreement under certain circumstances.

While standard agreements provide excellent outlines, they should be modified to address each party's particular needs and the specific issues of a project. Drafting the owner-architect agreement is like a design problem whose solution is a plan for a continuing business relationship. The plan should anticipate potential disagreements and provide solutions before they become points of contention.

Architects without the luxury of in-house counsel or the ability to have a lawyer review every contract should at least have their owner-architect agreement reviewed on a regular basis. Almost without fail, a well-drafted agreement can increase an architect's profits and greatly improve relationships with their clients. ■

Questions: *If you have comments about your career, professional ethics, the law, or any other facet of architecture, design, and construction, send submissions: by mail to Mentors, Architectural Record, Two Penn Plaza, Ninth Floor, New York, N.Y. 10121; fax 212/904-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

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CIRCLE 14 ON INQUIRY CARD

PULSE RECORD readers were asked: Have architectural fees kept pace with the increasing costs of personnel and technology?

No. Our service level is increasingly set by our competition and our clients, not by ourselves, and we are increasingly out of sync with our costs. Our firm tacitly accepted this outcome by making it our goal to gain "great commissions," as the "Fee Dilemma" article states [October, page 110]. However, even if we could have received the anticipated fees on our projects at the point of negotiation, we would still miss our cost/profit targets.

Architects have a strong propensity to work beyond their means, an approach to service, a kind of AMO similar in function to the one HMOs set for doctors. Professionals of every calling obsess over the quality of what they do and are made to feel guilty about self-imposed fiscal limitations on their practice. Until the codependency that causes clients/commissions to assume the role of enabler is removed, no number of fiscal regimens will prevent architects from abusing their practice at the expense of their business and profession.
—Chris Williams
Glastonbury, Conn.

More answers to: Is interior architecture architecture's neglected stepchild?

Yes. Interior architecture should be elevated and praised because it has a psychological and spiritual appeal and satisfies the needs of the owner and everyday users of a space. I've heard non-art/architecture minded people communicate their response to great architecture by saying a building is comfortable only after they had gained access to the interior spaces and garnered a whole experience of a completed process.
—Anthony Brown
New York City

Yes. I've always imagined what must have been an amusing and stressful scenario: The well-to-do, enthusiastic, and well-intentioned client drags the interior designer to the next meeting with the Master. The client introduces the interior designer to the Master: "Mr. Wright, this is my interior designer, who will be helping me with all of the interior finishes and will select all of my furniture. They may also have some suggestions about the layout of the interior spaces."

Architects have sold an entire, and vital, segment of their practice down the river by being less than involved in the interior design of their buildings. It is in the interior that many people experience architecture most intimately. Can you imagine Frank Lloyd Wright, who routinely designed every aspect of his buildings—sometimes down to the place settings for the table—willing to sit still for the idea of anyone else designing his interiors?

Interior architecture speaks to a relationship with space, light, proportion, and an intimate connection to materials that is fundamental to the design and experience of human space. What else is being an architect all about?
—Howard M. Hill, AIA
Brand + Allen Architects
Houston

More answers to: Should architects be more political?

Yes. Architects have the unique opportunity (and responsibility) not only to design structures, but also to design society itself. The environments created by architects shape the lives, morals, thought processes, and every other element of a society. So by definition, the architect is shaping the politics of society.

Architects should be ready and willing to step into the shoes of the entire political fray, from the local town-planning board to state and federal positions. An architect's training and thought process is ideal to serve as the basis for making decisions in the political arena. Architects need to retake their place in society as the master builders and developers of society.
—Kevin Jay Walls, AIA
Hardwick, N.J.

More answers to: Do American architects have much to learn from their British or European counterparts?

Yes. Europeans know that dark interiors with small windows are designed only for structural and security reasons. Europeans do not have the mobility that Americans have. Buildings pass through generations.

British and European architects deserve credit for addressing the real issues, such as daylighting, transparency, human needs and comfort, and timelessness. If these issues are not considered priorities by American architects in the United States, American students will be traveling to Europe to study architectural history in decades to come.
—Suat Gurtan
Pompano Beach, Fla.

This Month's Question

In an era of prosperity, have architects abandoned social responsibility?
The national economy is at an all-time high, and federal and state coffers are overflowing, yet 2.7 million Americans live in public housing—much of which has either been pronounced "severely distressed" or been approved for demolition. And, as reported in this month's feature "Public Housing in 1999: A Hard Assessment" [page 76], the number of affordable-housing projects being built or renovated is not keeping pace with the need. Can architects take any of the blame? Is the profession averting its collective eyes in search of more lucrative or illustrious achievements?

Fax your response to ARCHITECTURAL RECORD, 212/904-4256, or visit www.architecturalrecord.com and click on News/Features/Dialogue to voice your opinion by E-mail. Note: *Pulse reflects individual responses to each month's question and is not meant to be construed as formal research.*

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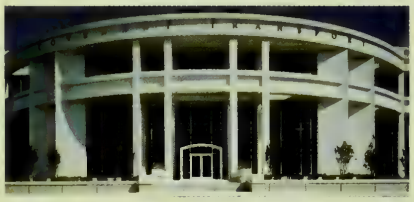

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CRITIQUE Olmsted's informal landscapes fit far better in a chaotic democracy than their formalist counterparts.

BY WITOLD RYBCZYNSKI

What kind of public spaces suit a sprawling democracy such as the United States?

Thomas Jefferson thought the capital of the new republic should be a modest grid of intersecting streets, but Charles Pierre L'Enfant's scheme, a much more ceremonial and formal plan of vistas and stately avenues, prevailed. L'Enfant's breed of formality in urban design reappeared in the World's Columbian Exposition in Chicago in 1893 and in Daniel Burnham's great Chicago Plan, which inspired the monumental civic centers of the City Beautiful movement early this century.

The formal aesthetic is present in McKim, Mead & White's campuses for Columbia and New York University and in the elegant town plans of John Nolen. It can even be glimpsed in the bleakly Modernist office-building plazas of the 1950s and '60s. The corporate campuses of the 1980s, which sometimes resemble Baroque palace compounds, are more literal in their use of formal devices, as is Friedrich St. Florian's controversial design for the World War II Memorial on the Mall in Washington, D.C. New Urbanist town plans include Burnhamesque axes, crescents, and ovals, albeit on a reduced suburban scale.

As a result, it is not surprising to find formality in the recently unveiled plans for Millennium Park on Burnham's Chicago lakefront. This $200 million project, designed by the Chicago office of Skidmore, Owings & Merrill, adjoins Grant Park. According to the *New York Times*, it will be "a conscious continuation of the Beaux-Arts style," with "antique street lights, formal garden paths and fluted columns in a grand peristyle." The centerpiece of the park will be a large, green space called the Great Lawn, an obvious reference to New York City's Central Park. Yet nothing could be more different from the formal geometry of Millennium Park than the picturesque irregularity of Frederick Law Olmsted's and Calvert Vaux's mid-19th-century creation.

Witold Rybczynski teaches architecture and urban design at the University of Pennsylvania. His latest book is A Clearing in the Distance: Frederick Law Olmsted and America in the Nineteenth Century.

Clashing concepts

The contrast between the two American ideals of public space was brought home to me recently during a visit to Lawrenceville School (near Lawrenceville, N.J.), whose grounds were laid out by Olmsted in 1885. His original plan included a chapel, a classroom building, a headmaster's residence, and several "houses" for the students; Olmsted disliked dormitories. The focus of the campus was a public green, today called the Circle.

In time, Lawrenceville School outgrew its original plan and needed additional buildings. In the 1920s, the prominent firm Delano & Aldrich designed a major expansion south of the Circle. Times and fashions had changed. The new buildings were in the American Colonial—that is, Georgian—style. The new site plan, too, followed a colonial precedent: the College of William and Mary in Williamsburg, Va. A rectangular depressed lawn (named the Sunken Garden and later rechristened the Bowl) was enclosed by two dormitory blocks, a library, and an administration building. At the head of the lawn, its facade dominated by a pedimented porch, stood a large classroom building.

The seemingly haphazard Circle at Lawrenceville School, laid out by Olmsted in 1885, draws people into the landscape.

I was struck by the contrast between Lawrenceville's Bowl and Circle. The Bowl is impressive; its main axis lines up with the temple-porch, while the central entrances to the dormitories create a secondary cross-axis. No pathways mar the perfect green surface. William Delano once complained that students were damaging the grass. "It is hoped that public spirit will make them take a few round-about steps in order that the simple lawn treatment in the Bowl may be preserved," he counseled.

The Circle is different. Despite its name, it is really an irregular shape, dotted with trees and divided by a diagonal footpath. If the Bowl is a nod to Jefferson's "academic village," the unassuming Circle evokes a village in New England. The main entrance drive swings casually around the green without fanfare. The space does not appear designed; on the contrary, it looks almost accidental.

Perhaps that's why the first time I visited Lawrenceville School, without making a conscious decision I found myself strolling across the Circle. I was simply drawn into the landscape. One of the house masters confirmed that the Circle is more popular with students than the

Bowl. I could understand why. It is not that the Bowl is intimidating—it is a pleasantly scaled space, the Georgian-style buildings are attractive—but it does not invite our presence. It is a complete "picture," in Delano's words.

The contrast between formality and picturesqueness is not merely aesthetic; there is a deep philosophical difference between the Circle and the Bowl. Charles Eliot Norton, celebrated man of letters and distinguished Harvard professor of art, said that the public designs of his friend Olmsted "answer the needs and give expression to the life of our immense and miscellaneous democracy." Walking through the Circle, I realized that Norton had put his finger on a neglected characteristic of Olmsted's work. At Lawrenceville, the buildings take their places around the green like friends at a table—a picnic table. Neither the headmaster's house, nor the main classroom building, nor even the chapel is given pride of place. Each shares importance—no more, no less—with the student houses. Of course, schools, like society, rely on rules, but the architecture and planning of the Circle do not enshrine or celebrate authority. The Bowl orders space; the Circle accommodates it—and us.

The formal Bowl at Lawrenceville, while pleasant, does not invite human participation and has proven less popular with students.

What I suggest is that Olmsted's picturesque and informal approach reflects a better understanding of America's pluralistic, often chaotic society. The certainties of formal axial planning seem out of place in the U.S. because they elevate institutions and organizations above the individual. Olmsted's is a more republican landscape.

In June it was announced that Frank Gehry would design a music pavilion for Chicago's Millennium Park and will also be responsible for the design of the Great Lawn. I hope he draws inspiration not from adjoining Grant Park but from another Chicago park: Washington Park. This park was laid out on the South Side by Olmsted and Vaux in 1871. The centerpiece is a vast meadow Olmsted named the South Open Green. Its 100 acres of open turf, larger than Long Meadow in Brooklyn's Prospect Park, are breathtaking, but the design is simple. The irregular space is surrounded by groves of trees. The ground is nearly level.

No formal geometry circumscribes the meadow. The space is empty, waiting for someone to walk into it. The center of attention is the individual—alone or in groups—as it is in all Olmsted's public landscapes. Which, in an immense and miscellaneous democracy, is exactly as it should be. ■

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Top view aerial photograph

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Sample animation of the ***Collier Center*** developed by **Opus West Corp.** "Fly-over" created by **Nick Hower** and **Kory Kapfer**.

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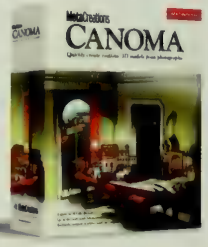

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DIGITAL ARCHITECT Linking software from different vendors will lower costs, ease schedules, and improve the quality of the design and construction process.

BY JERRY LAISERIN, AIA

Within the past decade, computer software has successfully applied cost-and-time formulas to manufactured products. This business-oriented approach is fine for factory-made widgets, but buildings are one-of-a-kind creations, pieced together in the field under varying conditions and from many thousands of parts and raw materials. Letting time and budget drive project delivery means ignoring these variables—and the many opportunities that come with them.

The architecture, engineering, and construction (AEC) industry has its own set of software vendors who understand the complexities of the process and are finding ways to connect all the elements of a project. Doing this successfully, however, means that AEC vendors must find a method to integrate the data contained in the different building models that each discipline develops. Allowing engineering software to communicate with the programs used by electricians, interior designers, and, of course, architects, would streamline the construction process. But making these links is not so easy.

What is computer modeling?

From basic CAD to the most sophisticated construction scheduling system, all software must achieve one basic goal: to form a bridge between mathematical coding—the language that computers read—and the characters and pictures that humans can see and understand. When software developers translate descriptions of the real world into mathematical code, they call that process "modeling." The use of this term by computer scientists confuses architects, who are accustomed to thinking of models as chipboard and foam-core replicas.

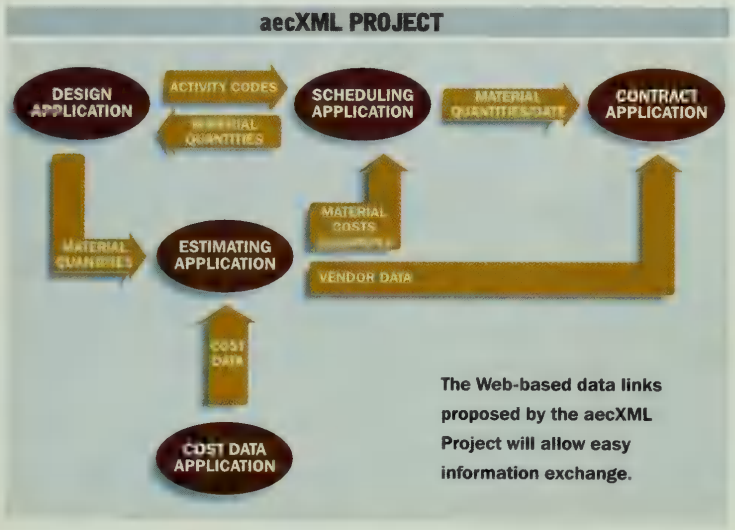
Basic CAD software that produces 2-D drawings is actually a model of the drafting process. Advanced 3-D CAD software creates what some vendors call a "virtual building." To the extent that such virtual buildings include mathematical descriptions of a building's geometry and parts, they do correspond to the physical scale models with which architects are familiar. Computer models of buildings, however, also can include the attributes of a building's components, like the density of the concrete or the fire rating of the partitions.

Other kinds of design and construction software also rely on models, or representations of real-world objects. Specifications software, for example, defines the composition and quality of the parts of a building and often includes descriptions of how to assemble those parts. Estimating software uses mathematical models of the relationships among materials, sizes, quantities, and unit prices. Scheduling software combines representations of material, equipment, and labor resources into time-based models that represent the sequence of design and construction events.

These diverse software models of the same building should, ideally, be capable of communicating freely with each other. But, in most cases, they don't.

Instead, software packages differ at many levels, including how they name, subdivide, and classify building parts; the ways they organize the attributes of those parts; and their methods for linking parts and attributes. They also differ in the techniques they use to represent parts and attributes. The consequences of all this variation include lost or duplicated information, inaccurately transferred or converted files, and multiple databases of redundant information (the digital equivalent of two partners' Rolodexes containing different phone numbers for the same client). Plus, much time and effort are wasted in checking these possible sources of error.

Everyone would benefit if these communication problems were eliminated. Architects and engineers could incorporate better cost and schedule information into early design stages, sparing themselves some of the agonies of redesign. Those involved in the construction phase would enjoy faster project documentation and smoother workflow. Building owners and operators would benefit from more predictable time and cost estimates and would get a useful set of "as-builts," along with other project information, when the job is done.



The Web-based data links proposed by the aecXML Project will allow easy information exchange.

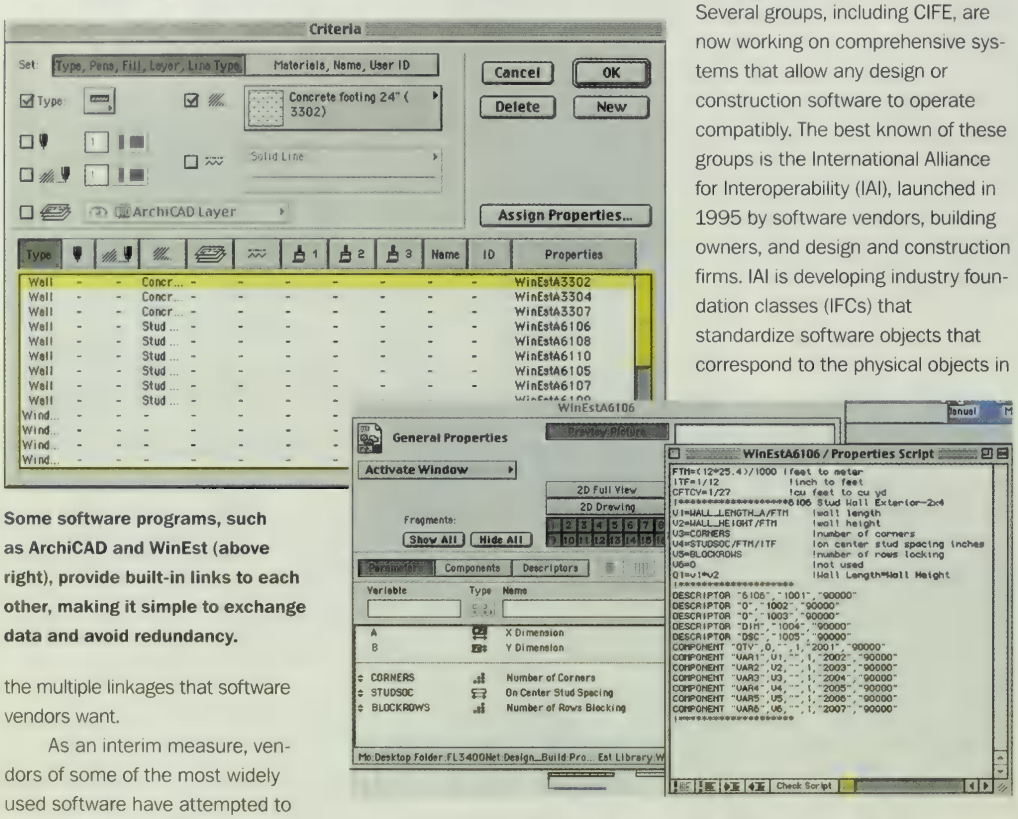
Building connections

Given the potential benefits, it's surprising that so little has been accomplished in linking design information software to costs and schedules—though it is not for lack of trying. Just about every building-product trade association has a classification scheme. In the U.S., most classifications fit within the Construction Specification Institute's

Contributing Editor Jerry Laiserin, AIA, is the interim executive director of the aecXML Project.

Masterformat or the ASTM standard Uniformat II (for classifying assemblies like slabs or interior partitions). Other countries, including Germany, Japan, and Brazil, have their own classification systems, as well.

AEC software vendors have not, as yet, been able to build on these systems. Traditional data-linking tools, like file-conversion programs, are not general enough for the multiple linkages that software vendors want.



Some software programs, such as ArchiCAD and WinEst (above right), provide built-in links to each other, making it simple to exchange data and avoid redundancy.

As an interim measure, vendors of some of the most widely used software have attempted to forge direct links to one another. Some of these links rely on common file conversions or translations. Others rely on an application programming interface—one vendor publishes a set of software "hooks" to which other vendors write special connection routines that move data between the two packages. But these are still program-specific links that are only valid between specific applications.

Dr. Martin Fischer and his colleagues and students at Stanford University's Center for Integrated Facility Engineering (CIFE) are pioneers in finding ways to link disparate software programs. Fischer has found ways to make multiple off-the-shelf software packages communicate using an actual design and construction project—a biopharmaceutical manufacturing facility in Menlo Park, Calif., designed by Flad & Associates, based in Madison, Wis.

Fischer's group linked the building model, created in AutoCAD Release 14 and the ArchT architectural CAD add-on package (now distributed by EaglePoint), to Timberline Precision Estimating software. This eliminated many time-consuming manual steps in quantity take-offs and definition of work packages. A construction schedule from Microsoft Project was linked to the AutoCAD/ArchT model through Jacobus Technology's Schedule Simulator to build a virtual version of the building and identify the most expeditious construction staging. This yielded an informative kind of 4-D CAD (3-D plus time).

The general contractor reported that the cost estimates that were produced came within 5 percent of those prepared by manual methods, but were completed 25 to 50 percent faster. The schedules that the CIFE demonstration generated uncovered conflicts that might not have been detected otherwise. While Fischer's work [see Digital Architect, August 1999, page 39] provides insight into the interplay of multiple software packages on a real project, it is still based on semicustom interfaces among compatible programs.

Joining forces

Several groups, including CIFE, are now working on comprehensive systems that allow any design or construction software to operate compatibly. The best known of these groups is the International Alliance for Interoperability (IAI), launched in 1995 by software vendors, building owners, and design and construction firms. IAI is developing industry foundation classes (IFCs) that standardize software objects that correspond to the physical objects in actual buildings, such as wall assemblies, doors, and windows. Because IFCs are backed by the descriptions and attributes of each building object that they represent, they can be accessed by any IAI member with IFCs incorporated into their software.

But until IFCs are more widespread, many software developers offer their own proprietary pairings. For example, builder-oriented CAD programs like SoftPlan have complete bill-of-materials capabilities built in. Graphisoft's ArchiCAD has its own "object" language, complete with links to WinEstimator's WinEst estimating program. DATACAD LLC's eponymous CAD software now bundles the Estimator for Windows program from CMS Estimating. Specifications software vendor ARCOM (MasterSpec), scheduling software vendor Primavera Systems (Project Planner), and cost database provider R.S. Means (CostWorks) have announced plans to link to each other and to Bentley Systems' TriForma CAD software.

How the Web fits in

Any discussion of how disparate software programs will communicate must take into account the impact of the Web. An efficient tool for locating and viewing almost any kind of data, regardless of the software that created it, the Web may indeed make it easier for designers and other members of the AEC team to communicate.

The primary language of the Web is HyperText Markup Language (HTML). A newer Web language called XML, or eXtensible Markup Language, has features that HTML does not have, like the ability to describe and classify the data content—not just the appearance—of a Web page.

Dozens of companies, including AEC, will benefit from the data exchange possibilities XML offers. The McGraw-Hill Construction Information Group (which publishes RECORD), Primavera, and Bentley have joined with more than 130 other industry leaders worldwide to form the aecXML Project. The goal is to develop a framework for XML specific to the building and design industry.

The high percentage of overlap between aecXML advocates and IAI members means that the two will likely develop a supportive relationship—perhaps with aecXML serving as the Internet transporter for the IFCs. Regardless, emerging linkages among cost, time, and architecture will enable buildings in the near future to go up faster and more economically. ■

WWW *For a list of interoperable software vendors go to www.architecturalrecord.com and click on Digital Architect.*

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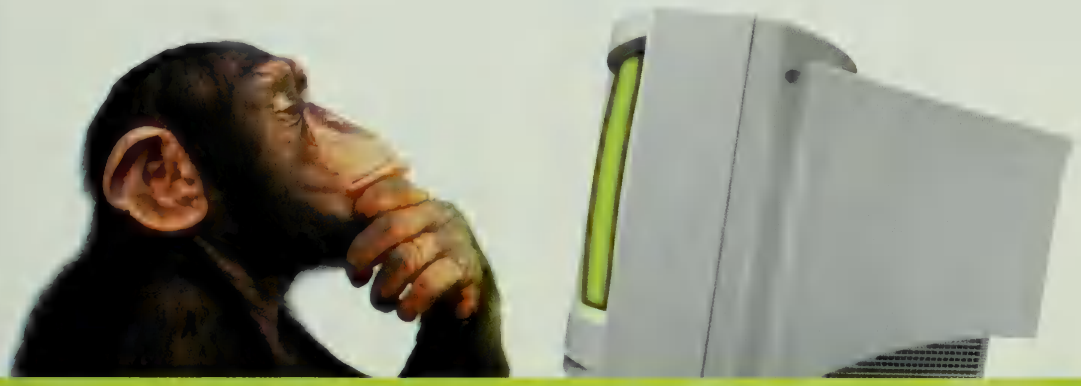

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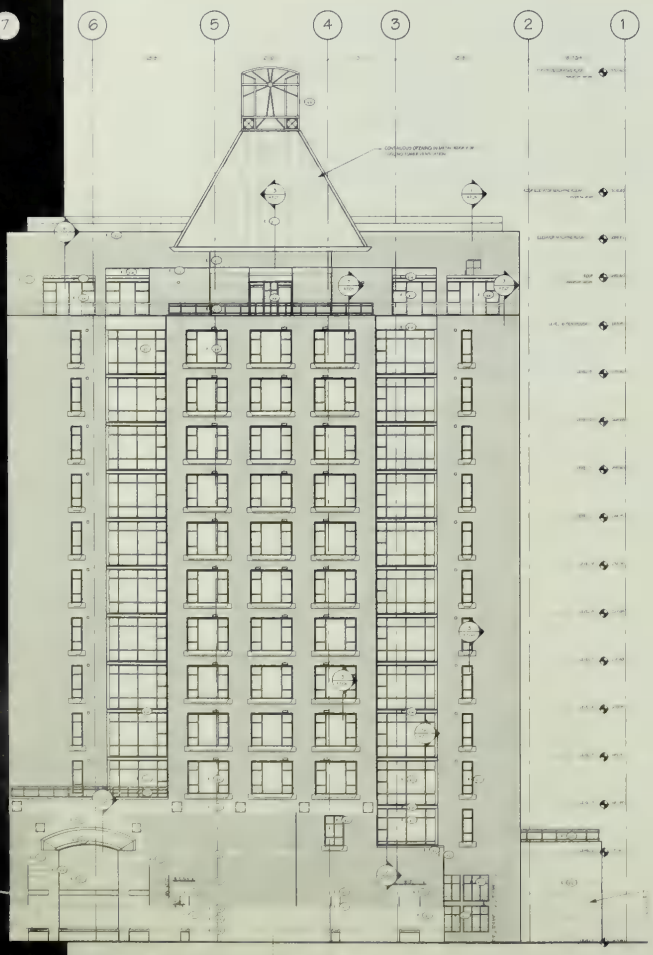

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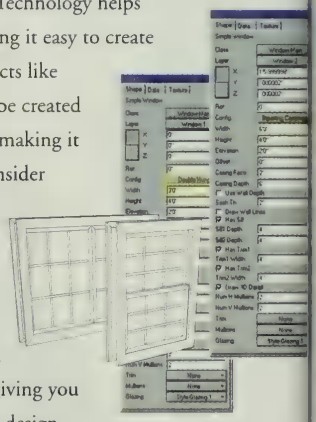

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CIRCLE 21 ON INQUIRY CARD

EXHIBITIONS At London's Royal Academy, a first retrospective of the work of Sir John Soane reconstructs a career—and a dome.

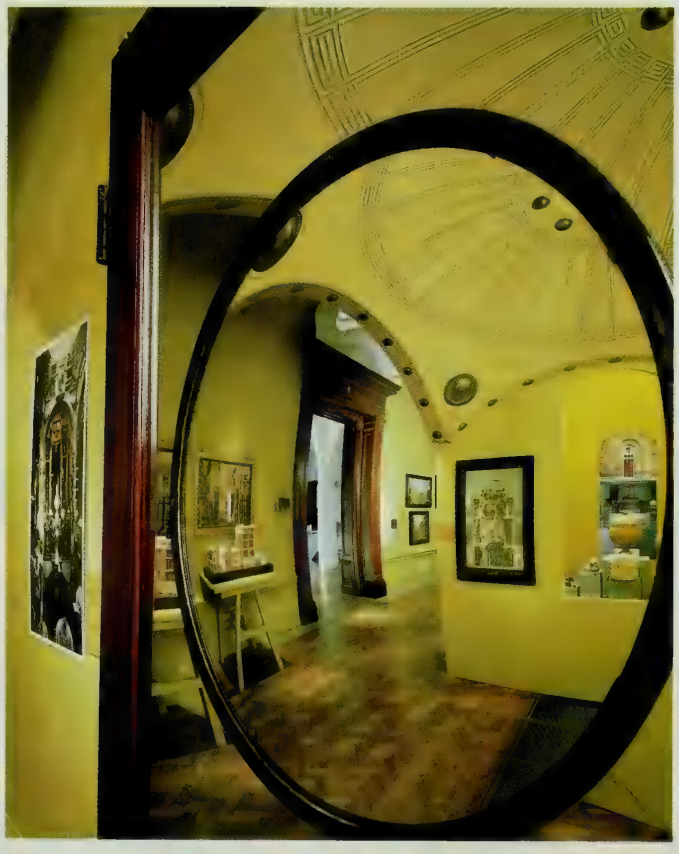
BY SUZANNE STEPHENS

"John Soane Architect: Master of Space and Light" *will be on view at the Royal Academy of Arts in London through December 3, after which it will travel to Vicenza, Italy, in March and to Paris in July.*

If you're in London before December 3, you should not miss the splendid retrospective "John Soane Architect: Master of Space and Light," on view at the Royal Academy of Arts. Although this recommendation comes from a certifiable "Soaniac" (see below), pay it some mind.

Surprisingly, this is the first exhibition of the work of Soane, the original neoclassical architect who lived from 1753 to 1837. Assembled by Margaret Richardson, curator of the Sir John Soane Museum, and MaryAnne Stevens, senior curator of the Royal Academy, along with Chrisopher Woodward and Ptolemy Dean of the museum, the exhibition has been dramatically installed by Piers Gough of CZWG Architects. Gough, who designed the epochal show on Sir Edwin Lutyens at the Hayward Gallery in 1981, has again used the subject's architectural principles to create evocative settings in which to show the various works. While the device could become too cute if the architectural fragments were deployed blatantly throughout the installation, in its current locale, Gough's Soanic display design works well with the smallish scale of the 211 models, drawings, furniture, and architectural objects in the high-ceilinged rooms.

One of the highlights of the exhibition is a computerized walk-



Pier Gough's artful installation of the Soane exhibition at the Royal Academy incorporates a number of the neoclassical architect's compositional and spatial principles, including Soane's skillful use of mirrors (above) to enhance the optical experience.

Suzanne Stephens serves on the board of the New York-based Sir John Soane Museum Foundation.

The largest gallery in the Soane show contains a re-creation of a dome in the Bank of England, which hovers above models for the bank itself.

through of Soane's famous Bank of England, which was largely demolished when the bank was rebuilt in 1922. While the three-dimensional computer representation suffers from distorted camera angles, enough of an architectural you-are-there sensibility comes through to make the production mesmerizing.

In addition, a new cast acrylic model of the trapezoidal walled block from which Soane carved his famous spaces for the bank has been constructed for the show. It occupies a gallery chock-full of original wood and/or cork models of the bank and is topped by a re-creation of one of the bank's major domes at 70 percent scale.

Other works in the four galleries devoted to the show include drawings from Soane's student days and renderings by Joseph Gandy of Soane's spatially complex house-museum at 13 Lincoln's Inn Fields, Pitzhanger manor at Ealing, and the Dulwich Picture Gallery outside London. All told, the ensemble well conveys the stunning use of natural light, strong abstract neoclassical forms, and idiosyncratic classical detailing that have caused Soane's work to be so revered almost 200 years later.

In the catalogue accompanying the exhibition, edited by Richardson and Stevens (Yale University Press, $75), Robin Middleton cogently argues that "The emphasis of classical architecture is on form: Soane stresses space, and this he organizes in wholly unclassical ways." Another essay by Margaret Richardson notes that when Soane died in 1837 his contemporaries considered him important as a connoisseur and patron, but not necessarily as an architect. Not until the early 20th century was Soane's reputation resuscitated. The resuscitation continues: Also accompanying the exhibition is a comprehensive biography, *John Soane, An Accidental Romantic* (Yale University Press, $45) by Gillian Darley. Now, if only the show would come stateside. ■

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RECORD NEWS

KOOLHAAS WINS COMPETITION FOR OPORTO'S CULTURAL SHOWCASE

Oporto, Portugal, and Rotterdam, Netherlands, are the two cities designated European Cultural Capitals for 2001, a rotating title awarded by the European Community to promote year-long special programs of cultural activities. In the case of Oporto, local and central governments have chipped in to endow the city with two new cultural facilities for the occasion, the Serralves Museum of Contemporary Art, designed by Alvaro Siza and opened this year (see page 102), and the House of Music, a new concert hall.

The latter project got off to a late start early this summer with the announcement that a design by Rem Koolhaas and the Office for Metropolitan Architecture in Rotterdam had been selected, in a limited competition with Dominique Perrault and Rafael Vinoly. The jury included Portuguese architects Siza, Eduardo Souto de Moura, and Manuel Salgado.

For music mavens

The freestanding building will occupy the Rotunda da Boavista, a Beaux-Arts-style circular plaza west of the city center. It will contain a 1,500-seat main hall, a 350-seat chamber music hall, educational facilities, a center for "cybermusic," and a roof terrace and restaurant.

The OMA design (above) is an expressive, angular, rocklike form. Much of the facade is glass, including the front and rear walls of both auditoriums, which overlook the city. Another glass wall separates the two halls. Porto 2001, the public consortium overseeing the House of Music, hopes to have it completed in the latter months of 2001, although the schedule and final budget are still under study. *David Cohn*

URBAN LEADERS COVER THE WATERFRONT IN CITIES CONFERENCE AT HARVARD

Once centers of urban industry, waterfronts now often face problems such as diminished port functions, obsolete maritime infrastructure, pollution, decay, and environmental degradation. Because many cities now seek opportunities and ideas for reusing their waterfronts, political leaders and urban planners gathered in October to explore effective models for transforming these problematic urban areas into civic and economic assets.

The Harvard University Graduate School of Design, in collaboration with the City of Boston and Mayor Thomas Menino, hosted "Waterfronts in Post-Industrial Cities," a three-day conference examining international urban waterfront development. Attendees from several continents presented their cities' waterfront redevelopments as case studies. These ranged from Vancouver's almost fully implemented plan that gives priority to housing, to Bilbao's use of culture as a tool, to Havana, where plans are still in their infancy because of the struggle between modernization and preservation.

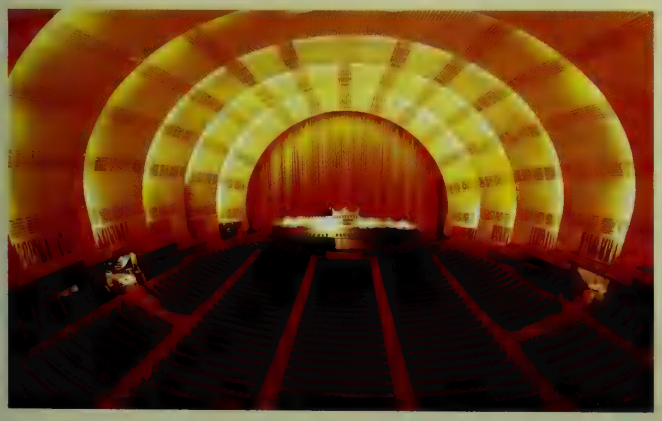
Learning from the past

There were lessons to be learned from the presenters. For instance, Lord Mayor Frank Sartor of Sydney admitted that the redevelopment of Darling Harbor was probably carried out too quickly and, as a result, remains relatively isolated from the rest of the city.

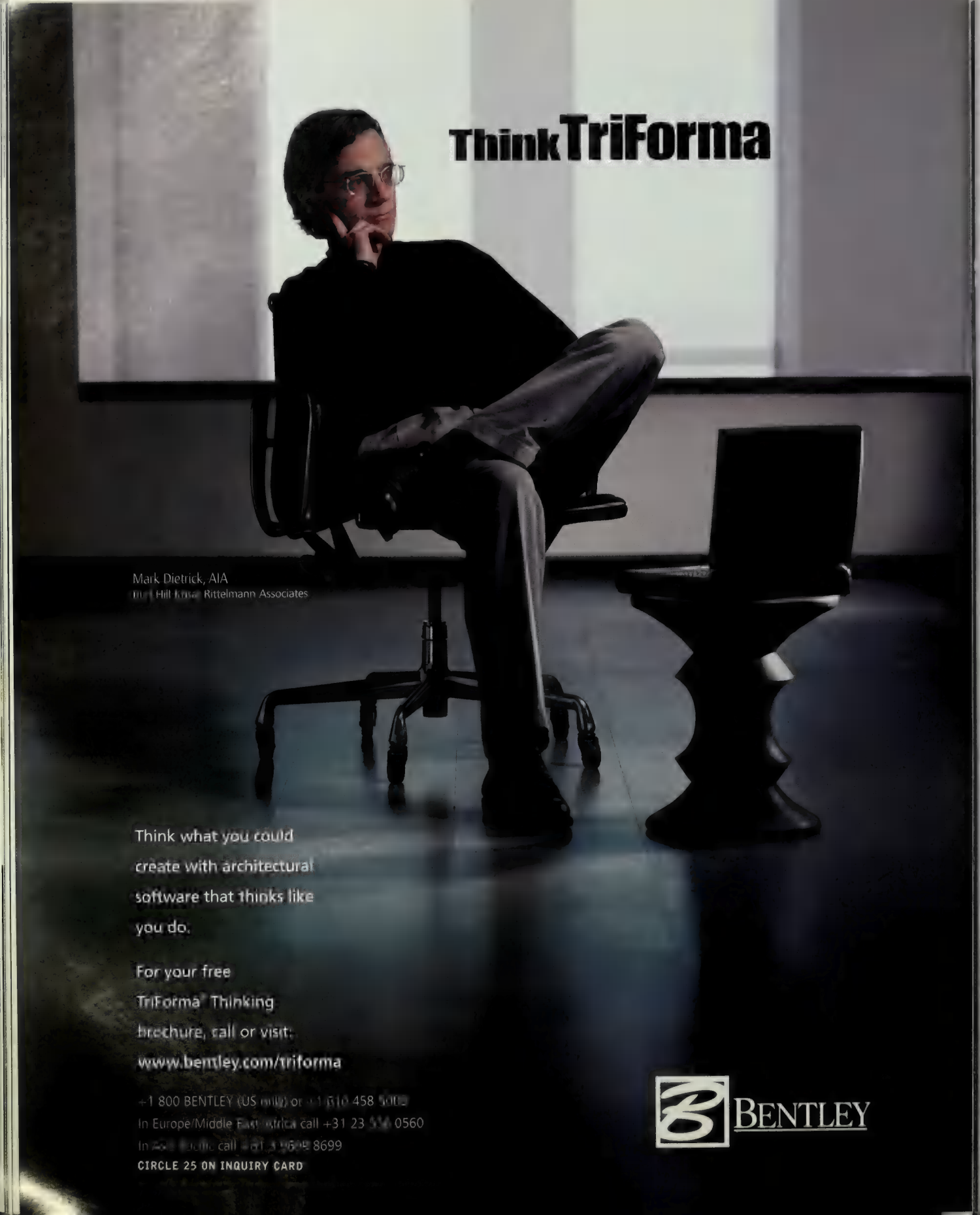
Despite the geographic, economic, and demographic differences between the cities represented, striking similarities emerged in terms of the challenges they have faced. Transportation, financing, finding a balance between industrial and other uses, and achieving political, business, and design consensus were issues in almost all cases.

According to Richard Marshall, assistant professor of Urban Design at the GSD and a co-organizer of the conference, "Waterfront redevelopment is often portrayed as a cure-all for a city's ills, as a kind of urban panacea. Sometimes we forget that these plans are born out of a process that at times requires critical evaluation. Frequently, planners and architects are brought into this process after critical decisions have been made. We are holding this conference because we believe that these developments are an opportunity to reflect new thinking about cities."

The importance of a master plan and a design philosophy was emphasized, but by featuring so many decision makers, the conference organizers implicitly advocated an inclusive approach that engages designers, politicians, developers, and economists. *Elizabeth Kubany*



RADIO CITY RETURNS TO ART DECO GLORY AFTER EXTENSIVE RESTORATION
New York City's Radio City Music Hall, opened in 1932, had been showing its age in recent years. The venue was in dire need of cleaning, repairs, and modern communications and structural systems. But last month, Radio City reopened triumphantly after closing for seven months and undergoing a $70 million restoration overseen by Hugh Hardy, FAIA, of the New York firm Hardy Holzman Pfeiffer Associates. And restoration is the right word: the architects' goal was to return the hall to its original glory. Furniture, fabrics, carpeting, and lighting fixtures were cleaned, repaired, or remade. The ceilings have 720,000 new sheets of gold and aluminum leaf and the stage has a new 112-foot-wide gold-silk curtain. Almost 6,000 new seats were installed. The three-story-tall *Fountain of Youth* mural by Ezra Winter was cleaned of grime. And the famous sunlike proscenium (left) is once again Rockette-ready. *Soren Larson*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AMID A FLURRY OF ACCOLADES, MIT REDEDICATES AALTO'S BAKER HOUSE

Professors of a young Alvaro Siza dismissed the work of Alvar Aalto: "Too many curves," they said. Siza related this story at "Interpreting Aalto," a conference organized by the Massachusetts Institute of Technology on the occasion of the rededication of one of Aalto's few American works, Baker House. Aalto is now so revered that MIT took on the restoration of the 50-year-old dormitory with the reverence due a major landmark.

Restoration architect Perry Dean Rogers replaced nearly every system within the structure and augmented electrical and telecommunications services, discreetly extending Aalto's design language wherever alterations were visible. The design team, led by David Fixler, AIA, went through Aalto archives in Finland for guidance, in the end completing some unbuilt details. The ceiling of the dining hall, for example, now conceals new systems above the wood-batten surface that Aalto intended. More work must be done, including restoring windows with, Fixler hopes, duplicates of the original wood.

Aalto criticized the fetishization of building techniques that enamored other pioneers of Modernism. He wasn't afraid to prop a Modernist cantilevered porch with a winsome bundle of saplings. But he also argued fervently for research-based design. More than one speaker cited the technical innovations of the seminal Paimio Sanitarium. The design of Baker House itself was assisted by MIT research on the relationship of space design to friendship formation, according to Lawrence Speck of the University of Texas.

MIT's dean of students, Rosalind Williams, talked of student experiences. "Baker attracts social people without imposing a tyranny of socialization," she said, citing the easy movement between floors encouraged by the cascading stair and the way the halls widen into numerous welcoming lounges. The building, Williams declared, sends a powerful message about "technology as a civilizing force."
James S. Russell, AIA

STV NAMED DESIGNER FOR JFK AIRPORT'S LONG-AWAITED RAIL LINK

New York City's STV has been named the primary architectural and engineering designer on a design-build project to build a new rail link to John F. Kennedy International Airport in Queens. With 10 new stations and several ancillary buildings, the 8.4-mile AirTrain light-rail system will link the airport's terminals to one another and to rental-car and parking areas. The line will also create transfer possibilities with the Long Island Railroad and New York's mass transit network, providing a long-awaited connection for subway riders. The client is the Port Authority of New York and New Jersey.

Although JFK is a vast mix of architecturally distinct buildings, STV is attempting to provide a unifying identity through design. The light-filled terminals and corridors will be constructed with a shared kit of parts adaptable to each site. More than 12 million riders are projected to use the new line in its first year of operation, which should begin in late 2002. *Soren Larson*

LONDON FIRM TO DESIGN REPLACEMENT SEATTLE AQUARIUM

Terry Farrell & Partners of London has won a competition to design the new $150 million Pacific Northwest Aquarium in Seattle. The project will be a key part of the city's planned transformation of an underdeveloped section of waterfront into a new park reconnecting the downtown area to Puget Sound. The Deep, a Farrell-designed aquarium under construction on the River Hull in England, is expected to play a similar revitalizing role in its neighborhood.

Today, aquariums face increasingly diverse challenges, from fostering stewardship of wildlife to linking research with start-up business enterprises. Additionally, fragile aquatic ecosystems require complex and expensive building systems. In Seattle, the price tag is an estimated $600 to $650 per square foot. "An aquarium is almost a biological entity in its own right," says Farrell.

The first phase of Seattle's 200,000-square-foot project will be built on two piers next to an existing aquarium, according to a master plan developed by a citizens advisory panel. Lyons/Zaremba of Boston will design 52,000 square feet of exhibits combining large-scale habitats with high-tech simulations. The outmoded 22-year-old facility will be torn down and replaced with a third pavilion and a public loggia.

Only eight architects responded to an initial search, even though aquarium experience was not a requirement. Of the three short-listed firms NBBJ had no aquarium experience, while Esherick, Homsey, Dodge & Davis (EHDD) of San Francisco (with Hewitt Architects of Seattle), has designed 16 aquariums. Though they were competitors for this project, EHDD and Farrell worked together on the design for London's new British National Aquarium—a project that is currently on hold.

For the Seattle aquarium, Farrell teamed with Mithun Partners as the lead local architect. Seattle firms Streeter & Associates and Weinstein Copeland Architects are also members of the design team. About one-third of the construction costs will come from private donations. The building is expected to be complete by 2005. ***Sheri Olson, AIA***

KENZO TANGE'S ASIAN ART MUSEUM MAKING A SPLASH IN NICE

The South of France seems an unlikely spot for a museum focusing on Asian art, but the new Musée des Arts Asiatiques in Nice is helping provide a cultural identity for the Alpes-Maritimes region.

The museum, the only building in Europe designed by Japanese architect and 1987 Pritzker Prize winner Kenzo Tange, is surrounded by an artificial lake, designed to produce an ambiance of calm. The structure itself is based on shapes of fundamental importance in Asia: the square, symbol of the earth, and the circle, symbol of the sky. The contrast of solid shapes and transparency provides dynamics: the white marble walls are separated by linear openings with glass panels, which are meant to add lightness. A first-floor rotunda, crowned with a glass pyramid, is intended to evoke the spiritual haven of Buddhism. ***Soren Larson***

AIA TAKES THE OFFENSIVE IN FIGHT FOR MORE SCHOOL AID

Secretary of Education Richard Riley took the podium at the AIA headquarters in Washington, D.C., last month to underscore the need to improve the nation's school facilities and to present the AIA's new publication, "Good Enough For Congress? A Pictorial Representation of Why Americans Deserve Better School Buildings."

The booklet documents the high schools attended by those members of the House and Senate involved in the legislative debate concerning interest-free bonds for school construction. A history of each school, including when it was built, any renovations or additions, and current enrollment, is accompanied by generally discouraging statistics about school conditions in each school's state. The photos in the booklet and the accompanying information will "personalize the issue for these legislators," according to AIA president Michael J. Stanton, FAIA. He hopes it will "drive home the need to do something to save our nation's schools."

The booklet is intended to spur Congress toward approval of legislation to aid school construction and renovation. Several bills have been introduced in the last three years, but none has been enacted. Those legislators opposed to federal involvement claim that it's a local, rather than national, issue, while those in favor feel it's the best way to bring facilities across the country up to minimum standards. Regardless of the outcome, the booklet offers one conclusion: all the representatives involved attended public schools.
Ellen Palmer Sands

DUANY PLATER-ZYBERK'S ZONING IDEA RUNS INTO ROADBLOCK IN FLORIDA

In 1991, the Miami firm headed by Andres Duany, FAIA, and Elizabeth Plater-Zyberk, FAIA, devised a model code for Miami-Dade County. The TND (Traditional Neighborhood Development) is a zoning overlay allowing higher densities in projects that take an urbanistic approach by incorporating housing, civic, educational, and commercial facilities into pedestrian-oriented environments.

Now a developer has proposed the first project using TND—and the process has become controversial. Though the proposed Pulte Homes development, which is called Salamanca, has the approval of local homeowners federations and Miami-Dade planners, it has encountered political snags and community resistance from the local community council formed to evaluate zoning questions. That opposition may end up derailing the project altogether.

Paradoxically, the prime reason given for the resistance to Salamanca is that the southwestern suburbs of Miami-Dade suffer from a near overdose of sprawl. Of course, that is exactly what TND is intended to counterbalance. That Salamanca should be Duany Plater-Zyberk's own design adds to the irony. The issue is further mired in political allegations, among them that community council members are using opposition to this high-profile project as a stump for political ambitions, denying it with great fanfare while quietly approving projects of steeper densities. Salamanca is under 9 units per acre; other recent approvals have had densities of 10 and 12 units per acre.

The best-laid plans

The $200 million Salamanca is designed for 1,440 dwellings on 160 acres with a range of housing types aimed at middle-income buyers. An eight-acre lake sits in the center of the site, which would also have nine acres of parkland with additional space devoted to a town square and community hall. Gridded blocks of gently curving streets are punctuated by 18 parks and playgrounds.

Florida has a statewide public-policy mandate to support projects that either involve urban infill or sustainability. And though Florida has, arguably, the two most high-profile New Urbanist towns in the country, Seaside and Celebration, critics say it has lagged in the building of such communities in more workaday settings.

"We must have the courage to support and approve projects that implement our plans and regulations controlling new development—projects that address density with mixed use and sensitive design," says James F. Murley, director of the Florida Atlantic University/Florida International University Joint Center for Environmental and Urban Problems. *Beth Dunlop*

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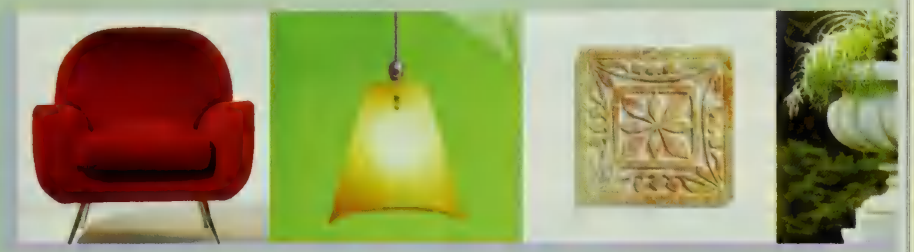

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MEIER-DESIGNED BUS STOPS FIND A ROUTE IN WASHINGTON, D.C.

If, as author E. F. Schumacher proposed, "small is beautiful," then Washingtonians are in luck. AIA Gold Medal winner Richard Meier, FAIA, has designed a bus shelter, about 5-by-13 feet, that is starting to pop up on D.C. streets.

While not radically different from the city's bronzed-aluminum and glass shelters, which first appeared in the 1970s, Meier's version is sleeker than the present one, with expressed joints and connections. Washington erected its first Meier shelter in September in front of the new Columbia Heights Metro station and plans to have 100 more in place by the end of the year.

Meier's design was originally part of a complete street furniture line for New York-based Adshel. The firm, according to company spokeswoman Kathy Kahng, offers high-end European-style street furniture to an international client base. The bus shelter was part of a line called Metropolis, originally pitched for New York City, that included a newsstand (left), public toilet, litter bin, and "info-booth," a sort of high-tech walk-in phone booth. Meier also designed a more traditional-looking line, the New Amsterdam, for more historical applications. New York passed on the contract, but Washington officials decided to pick up Metropolis.

While Washington did not pick up the entire Metropolis line, there is, according to Kahng, a growing interest in the U.S. for a consistent design scheme for public amenities. European capitals such as Paris or Stockholm routinely feature this kind of design, but the idea is just gaining a toehold here. Kahng cites Chicago as one American city currently implementing such a package. As for the Meier bus stops, could only an architect appreciate them? It remains to be seen if Washington's masses will react positively or simply wait for a ride as they've always done.

Ellen Palmer Sands

TRYING TO CRAFT A NEW IMAGE, WACO PLANS A NEW ART CENTER

After an international search, Olson Sundberg Architects of Seattle has been picked to design the new $6 million facility for the Art Center of Waco. "We hope to change Waco's undesired image from fire and death to a deserved one of creativity and new life with a world-class work of architectural art," says Joe Kagle, director of the center.

The 20,000-square-foot project will include a forum for artists-in-residence, galleries for emerging artists, art studios, and a high-tech learning center. Depending on fund-raising, construction is expected to be complete in 2003. The center's existing facility on the Brazos River will remain, but the new building's downtown location will facilitate its model outreach program: establishing satellite museums in public schools for students to manage and curate.

The center does not collect art, except for outdoor sculpture. "The trend for small museums is to place less emphasis on permanent collections and more on cultivating emerging artists," says Rick Sundberg, FAIA. His firm's work includes the Frye Art Museum in Seattle and homes for arts patrons with extensive private collections.

Architects from as far way as Finland responded to the art center's initial search. From 48 proposals, 6 finalists were chosen, including Philip Johnson/Alan Richie, William McDonough, Frederick Fisher, Thompson & Rose, and Lake/Flato. The Waco project is part of a boom in new museum buildings in Texas. At least six such structures will open over the next five years, including Tadao Ando's Modern Art Museum in Fort Worth [see page 53], Herzog and de Meuron's Blanton Museum in Austin; and Rafael Moneo's Museum of Fine Art in Houston.

Sheri Olson, AIA

WILLIAMS AND TSIEN GETTING FOLKSY IN NEW YORK

The Museum of American Folk Art broke ground last month on a new 30,000-square-foot building on Manhattan's West 53rd Street that will display more than 500 of the 3,500 pieces in its collections. New York's Tod Williams Billie Tsien and Associates designed the eight-level structure, which will cost $20 million and will likely open in 2001.

Williams and Tsien's design is capped by a skylight, with cut-throughs on each floor to allow daylight into the galleries and lower levels. Art will be integrated into the public spaces, including the lobby and stairwells, using a series of niches the architects have added to create interactions apart from the traditional gallery setting. Six of the eight levels will be above grade; seven will be public space, with an atrium, auditorium, classrooms, cafe, shop, and informal education areas in addition to the art displays. The museum will also maintain its current home in a gallery near Lincoln Center. ***Soren Larson***

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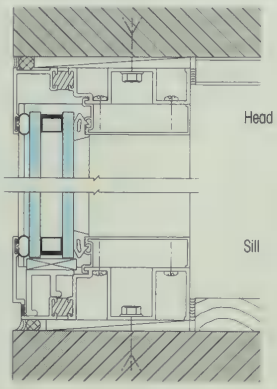

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RARE PUBLIC EFFORT BY MURCUTT NABS TOP AUSTRALIAN HONOR

One of the few public buildings designed by celebrated Australian architect Glenn Murcutt has won the Royal Australian Institute of Architects' (RAIA) highest accolade: the Sir Zelman Cowen National Award for Public Architecture. The New South Wales RAIA jury, describing the Arthur and Yvonne Boyd Education Centre three hours from Sydney, said, "to visit this building . . . is to experience an architectural work of dignity and restraint, capturing the spirit of the Australian landscape."

Until now, Murcutt's reputation has rested primarily on his private houses for hand-picked clients and his low-cost housing for Aboriginal people in Arnhem land, in Australia's remote Northern Territory. Murcutt, who is seen as having defined the vernacular in Australian architecture, claims to be a perfectionist who cannot stomach the compromises often involved in the construction of large public or commercial buildings.

Adhering to ideals

Despite the building's public nature, the Boyd Centre—designed by Murcutt with his wife and partner, Wendy Lewin, and architect Reg Lark—appears to embody many elements of Murcutt's philosophies. Approaching the structure, visitors encounter an angled corrugated-iron roof over the veranda, described by Lewin as "light, almost like a kite. It looks as if it has been held there by a string almost." It is angled to gather the northern light and also, says Murcutt, "lifts and catches the [view of] the entire top of the mountain."

Past the veranda sits a 100-seat hall with huge glass doors north and east, framing river views. They slide away to form an open room when the climate allows. Sliding wooden-slatted screens can be adjusted to filter the light and the view. Outside, the ground drops away sharply, letting the river come right up to and into the veranda and hall, creating what Murcutt calls "a Greek island temple quality . . . a platform and then the sea."

Another wing follows the contours of the landscape and has rooms, using lots of recycled wood, that are like tree houses. In sharp contrast is their exterior, with white geometric projected fins breaking down the scale of the whole, as well as framing the views and providing privacy from bed to bed.

A pursuit of nature

While Murcutt says he has never set out to create a specifically Australian architecture, his work has always been about "cracking the code," puzzling over and finding what is right for a place. For example, his inspiration for the light roof materials suitable for the Australian climate came from the "feathering" of native trees, the way nature "gets finer and thinner" toward the top. "You wouldn't want to straighten the leaf out. The seed, the code that is in the seed, determines how it will grow. And that is what I am trying to find the whole time, that code." *Anne Susskind*

INTERNATIONAL SCHOOL IN HUNGARY TO BUILD A BACKWOODS CAMPUS

Higher education is coming to the bucolic Hungarian village of Nagykovácsi, nestled in the Buda Hills a few miles northwest of Budapest. The American International School of Budapest (AISB) has planned a sprawling, $12 million campus, to open next fall just outside the small town. Some 50 nations are represented at AISB, which has been educating expatriate kids in Budapest for 25 years.

Designed by the Budapest firm Iparterv Épületervezô Rt in partnership with the Princeton, N.J.-based Hillier Group, the 160,000-square-foot complex sits on a gently sloping site bordered on three sides by forest and overlooking Nagykovácsi in the valley below. "It's a mix of traditional Hungarian architecture, using natural materials such as brick, wood, and stone, and a Frank Lloyd Wright influence, with low, sloping roofs and large overhangs," says Iparterv's Marina Annus, who heads the design team with her husband, Ferenc. Copper gutters and downspouts will adorn the overhangs, the buildings will be accented with leaded stained-glass windows in a geometric motif, and natural colors will be used in the interiors. "We wanted the campus to fit into its natural surroundings and not clash with the village," Ferenc Annus explains. *Carl Kovac*

MAYA LIN TO DESIGN WINTER GARDEN IN MINNEAPOLIS

American Express Financial Advisors has commissioned Maya Lin to design a "winter garden" for the company's new 6,000-employee client service center, now under construction at 9th Street and 3rd Avenue South in Minneapolis. Lin's greenhouse and conservatory—expected to rise three stories and include indoor and outdoor gardens and a waterfall—will adjoin the entrance of the new service center. The garden will be lighted at night, creating a glowing beacon next to the center's stone and glass facade. Both projects are expected to be completed in 2002.

The American Express project ties into the city's new "Avenue of the Arts," a public-private beautification project for a two-mile span of Third Avenue. Plans call for $20 million worth of public art installations, performing arts spaces, information kiosks, landscaping and new bridges.

Still best known for the Vietnam Veterans Memorial, Lin has been working more with buildings lately, designing private homes and renovating the Museum for African Art in New York City. ***Soren Larson***

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NORTHWEST ARCHITECTS GATHER TO DISCUSS NATIVE AMERICAN DESIGN

A group of Pacific Northwest architects is celebrating Native American architecture and attempting to ensure that native architects and clients are given more support. Citing the difficulties native architects have receiving recognition and getting native-oriented projects built, AIA Seattle and regional groups are convening seminars to study native topics.

Earlier this year, the AIA Seattle Diversity Roundtable started "Northwest Native Architecture at the Millennium," a series of programs involving native officials, architects, and others involved in projects for native populations. The discussions were brought to a larger audience in September in Yakima, Wash., where AIA Seattle sponsored an exhibition and conference as part of the AIA's regional gathering, which was themed "Designing for Diversity."

Attendees discussed the findings of AIA Seattle's Nancy Callery, AIA, including a trend toward policies of self-direction and sovereignty in native design. Conference speakers included former Oregon governor Victor Atiyeh—who has worked with native groups to implement sovereignty and economic initiatives—and Johnpaul Jones, FAIA, who detailed the design of the Museum of the American Indian on the Mall in Washington, D.C.

Another session centered on the struggle to complete projects on native lands. Bernie Whitebear, chief executive for the United Indians of All Tribes Foundation, described a decades-long quest to create Daybreak Star Center at Seattle's Discovery Park. Rick Huxley, AIA, and Tom Truesdell, AIA, of Bassetti Architects discussed the Wa He Lut School, designed with extensive community input and respect for native traditions.

Rich Dallam, AIA, of NBBJ and Henry Hardnett, AIA, of the Public Health Service followed up the conference with a presentation on their Alaska Native Medical Center in Anchorage, the largest project in the history of the Indian Health Service. If local architects have their way, presentations and discussions like these will continue. *Soren Larson*

KNOTT'S BERRY FARM UPGRADES WITH NEW THRILLS AND THEMES

Knott's Berry Farm, America's first theme park, is in the midst of the biggest expansion in its 79-year history. Last year, the park—located in Buena Park, Calif.—opened two new attractions: what it calls the world's tallest descending thrill ride and the longest wooden roller coaster in the West. New structures slated to open in 2000 include a 13-acre water park called Soak City USA, a Radisson Resort Hotel, and the Perilous Plunge, which the park bills as the world's tallest, steepest water ride.

The Perilous Plunge (above), being developed by Kishimoto Architects, will have a 1920s California boardwalk theme. The 24-passenger boats will climb 121 feet before plunging down a 115-foot water shoot at a 75-degree angle. On the way, boats pass by California icons, including a 90-foot-tall oil derrick, a 1920s Art Deco building reminiscent of a casino at nearby Catalina Island, and a man-made version of a California harbor. "The overall intent was to master plan and bring together cohesive themed attractions that complement the park," says Kaz Kishimoto, AIA.

The changes are part of a long-range plan by Cedar Fair LP, which bought Knott's in 1997 and plans to turn it into a multiple-day vacation resort. The park is about 10 minutes from Disneyland and an hour from Los Angeles.

Knott's has plenty to compete with. Among many new developments, Florida's Walt Disney World just added the 65,000-square-foot Millennium Village to its World Showcase at Epcot Center. The company's "imagineers" and architects designed a space where visitors wander freely among exhibits from more than 50 countries—such as a journey through a Brazilian rainforest or a simulation of Sweden's four seasons—and see scaled-down architecture from each culture. *Susan R. Bleznick*

OFFICIALS IN TAIWAN POINT FINGERS AT ARCHITECTS AND DEVELOPERS AFTER EARTHQUAKE DAMAGE

The recent earthquake in Taiwan has led to questions of whether architects and contractors shirked codes and irresponsibly constructed shoddy buildings. As of this writing, Taiwan's justice ministry was investigating dozens of people in the building industry on suspicion of involuntary manslaughter and endangering public safety after the earthquake, which leveled more than 10,000 buildings. In a wide-ranging crackdown to root out negligent architects, contractors, and other officials, prosecutors have forbidden several people to leave the island. The prime minister has urged that those responsible be brought to trial as soon as possible.

Taiwan's building code is modeled after Japan's stringent seismic requirements. Because structures in Taiwan are mainly reinforced concrete, investigators attributed some destruction to the use of inferior materials such as a diluted concrete mix and undersized rebars. Investigators also suspect that excess reverberation between the structures and the ground may have worsened the damage. Emergency shelters are being erected to house the homeless in the affected area. Members of the Architects Institute and Association of Structural Engineers are helping to evaluate the damaged buildings to determine whether they should be torn down or can be repaired.

A similar outcry arose in Turkey this summer after an earthquake toppled buildings there. Shoddy construction and flouting of building codes were blamed for near-total destruction. ***Rick Hsu***

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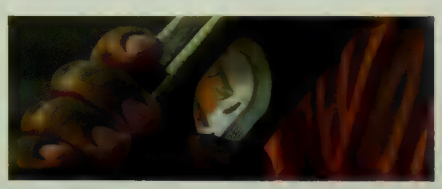

The International Masonry Institute

The International Masonry Institute — a labor/management partnership of the International Union of Bricklayers and Allied Craftworkers and the contractors who employ its members

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NEWS BRIEFS

The go-go Guggenheim The Solomon R. Guggenheim Museum has reportedly submitted a proposal to New York City for a new building designed by Frank Gehry, FAIA, that would rise as high as 45 stories on a platform over four East River piers. The project has been budgeted at about $850 million and would contain large exhibition wings, a theater, a skating rink, and other public amenities, according to an article in the *New York Times*. The new complex would be substantially larger than the $100 million, 250,000-square-foot Gehry-designed Guggenheim in Bilbao, Spain. The proposal is apparently one of nine for the site; the city's Economic Development Corporation is expected to select one within the next few months. Guggenheim officials declined to comment on the reports.

The Guggenheim might also be looking at South Africa. A new museum is part of a range of initiatives that are part of the redevelopment of Newtown, a section of Johannesburg. The city council is reportedly negotiating with the Guggenheim about plans.

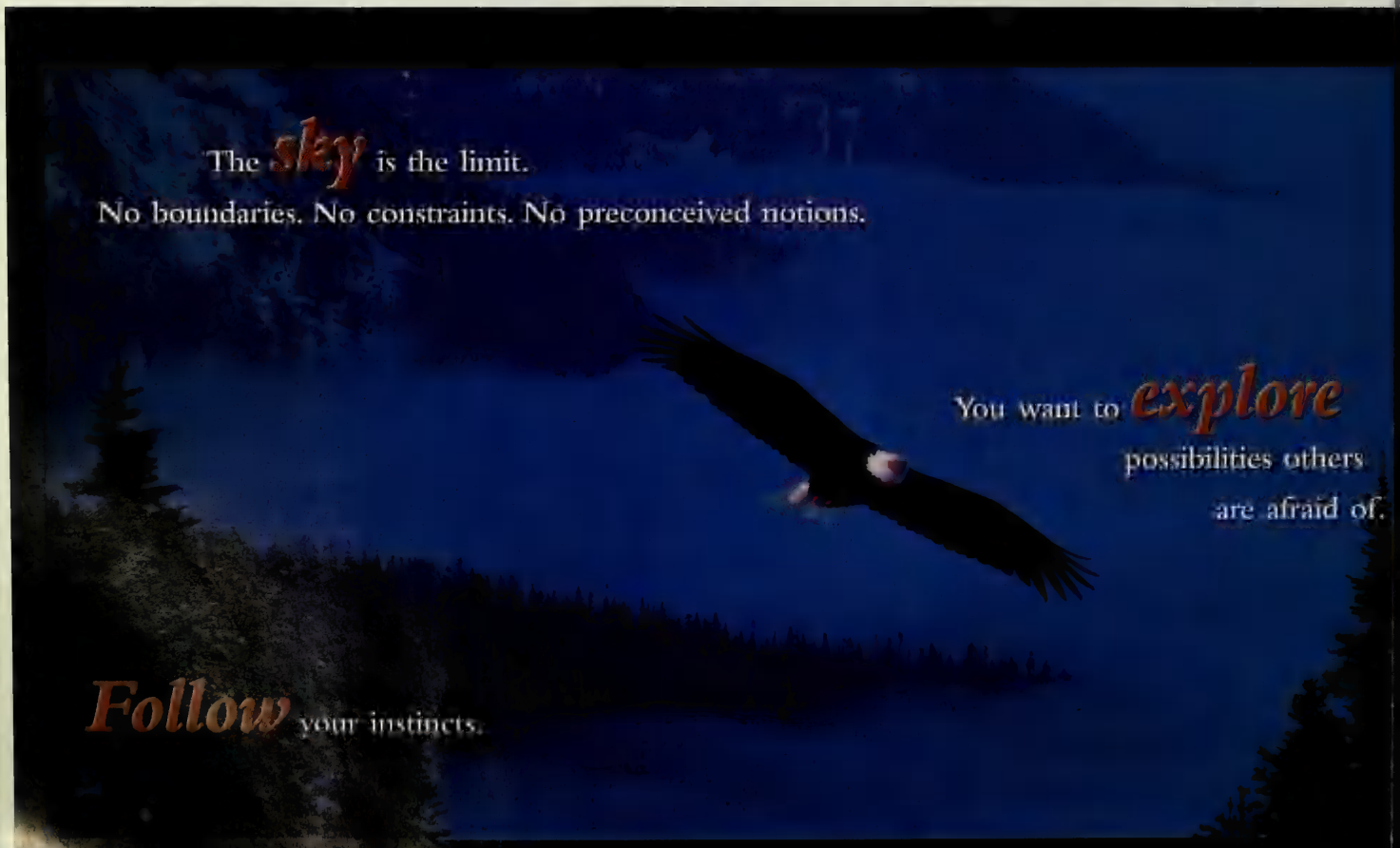
Thumbs up for de Young Trustees of the M. H. de Young Memorial Museum in San Francisco voted on October 14 to move forward with plans to build a controversial new $135 million museum in Golden Gate Park. The board endorsed Herzog & de Meuron's conceptual design of a low-rise building of glass, wood, and stone. The next step is to create a schematic design to flesh out details of the proposed 280,000-square-foot building. Trustees have raised about $82 million toward the total cost, and groundbreaking for the new de Young could begin in late 2001, with the museum open by late 2005.

Embassies to be rebuilt A team of Hellmuth Obata + Kassabaum and J. A. Jones Construction Co. has won a State Department contract to design and build new U.S. embassy buildings in Dar es Salaam, Tanzania, and Nairobi, Kenya, to replace facilities severely damaged by terrorist bombings in 1998. An official at Jones says the contract value is $64.5 million. Construction is to start next spring and the projects are scheduled to be completed by November 2002. The scope includes the design and construction of a new office building along with a U.S. Agency for International Development office at each site.

Mall politics Concerned that the grand vista envisioned by Pierre L'Enfant is being diminished by over building, a Joint Task Force on Memorials has proposed a "no build zone" down the spine of the National Mall in Washington, D.C. New construction would be prohibited along the axis from the Capitol to the Lincoln Memorial and along the cross axis formed by the White House and the Jefferson Memorial. Restrictions would also be applied to the periphery of the Mall. Instead, according to task force member Ron Wilson, new projects would be dispersed among federally owned lands throughout the city, to maintain the integrity of L'Enfant's original scheme. After a comment period that runs through early November, the Task Force will vote whether to adopt the new policy.

Michael's medal Michael Graves, FAIA, has been awarded the 1999 National Medal of Arts. The architect was one of 11 recipients from various artistic fields. Candidates are nominated by the National Endowment for the Arts and then chosen by President Clinton.

Fun in Philly The New York-based firm Ehrenkrantz Eckstut & Kuhn has designed an extensive waterfront redevelopment scheme in Philadelphia called the Penn's Landing Project. The 572,000-



square-foot initiative includes an amalgam of mass entertainment facilities, retails stores, and cultural venues, with sponsorship coming from a mix of public and private sources. At the center of the project will be a large central space, inspired by the grand scale of European plazas and intended to be a locus for public gatherings. The existing esplanade will be expanded and reconfigured as a city wall in the shape of a ship's hull, and the maritime motif will be repeated throughout the complex.

Ando is on Now that budget negotiations with the contractor, Linbeck Construction, are complete, work has begun on Tadao Ando's new Modern Art Museum of Fort Worth. The 154,000-square-foot concrete, metal, and glass structure should open in 2002.

Boxed out So-called big-box retail designs, such as those used by Costco and Wal-Mart, are not welcomed by the local government in Rockville, Md. Addressing concerns about the huge, blank look of their architecture and potential increases in traffic congestion, the city's mayor and council have passed a six-month moratorium that halts development of big-box projects until a study of their effects can be done.

Pittsburgh plans Pittsburgh mayor Tom Murphy has proposed a revitalization plan for the city's historic Fifth and Forbes corridor. Murphy's $480.5 million proposal would replace the local flavor of the corridor with a state-of-the art "entertainment destination" that will bring the latest shopping trends to the region's retail market. Under the proposal, the city's Urban Redevelopment Authority would buy 62 properties along the corridor and sell them to Urban Retail Properties, a Chicago-based developer. The plan has come under attack because it contains no provision for creating housing downtown and spares only four or five buildings around Market Square and just the facades of 10 more historic buildings.

High standards The Centex Building at Harwood International Center in Dallas (left) earned the highest score among 20 buildings given the Environmental Protection Agency's Energy Star label this year. The structure scored 99 out of 100. Designed by Richard Keating, AIA, and completed in 1976, the building serves as the corporate headquarters for Centex, one of the nation's largest home developers. The EPA's Benchmarking Tool rating system gauges energy performance as it compares to actual energy use, making it possible to compare the overall efficiency of buildings on a nationwide basis. ■

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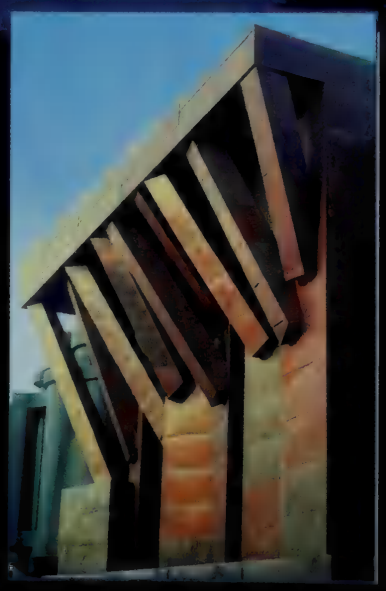

Project: TBWA [illegible] Los Angeles
Architect: Frank [illegible] Associates

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THE PEOPLE AND PRODUCTS FROM RECORD'S PROJECTS

Now you can turn to www.architecturalrecord.com to find out about the people and products involved in the projects published in RECORD. This month, you'll see who participated in K–12 school projects in the Building Types Study, Columbia University's Alfred Lerner Hall (right), and a campus for Sinte Gleska, the first Native American university. There's information about the products used, the teams that put it all together, including clients, designers, engineers, consultants, and builders, and how to get directly in touch with them.

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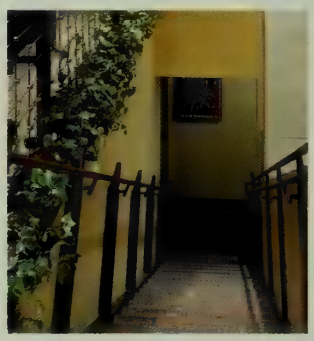
THE GREEN ARCHITECT



How do architects decide which products are most resource efficient? Now www.architecturalrecord.com provides answers to this question and more in The Green Architect, which includes coverage of green issues and sustainable design. There's Web-only content, as well as information from the pages of RECORD. The Green Architect presents a look at newly built structures that respect the environment. It also highlights more than 50 green products evaluated for durability, recycled content, and other attributes.

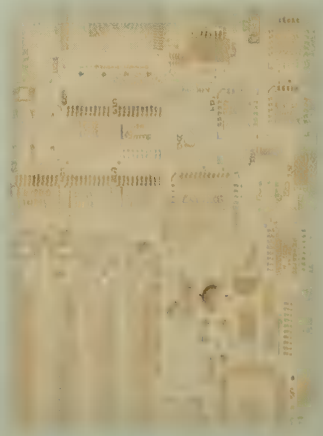
NOW ONLINE: THE DIGITAL ARCHITECT

When it's time to purchase new hardware or software, where do you go for guidance? RECORD's print coverage of computer software and hardware issues presents the information architects need to know to make purchasing decisions. That same direct, pertinent coverage now comes to the Web at www.architecturalrecord.com.

A combination of original, Web-only content and information gleaned from the pages of the magazine, Digital Architect includes current and past Digital Architect columns.

This is rounded out with a new section of product reviews and listings. Some of these are written by Jerry Laiserin, AIA, a computer consultant and contributing editor to RECORD who specializes in information technology. His reviews focus on some of the newest project Web site software. You'll want to check this page frequently as new companies and products are added to the list!

You'll find full coverage of our recent "Listening to Computer Experts" roundtable [August, page 74] on Digital Architect, including Web-only segments that reveal some of the most current thinking on computer issues, including time management and handling high volumes of E-mail, the future of project Web sites, the integrity of CAD designs, and hardware and software purchasing.



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CIRCLE 29 ON INQUIRY CARD

DATESEVENTS

Calendar

Breaking Through: The Creative Engineer
Miami, Fla.
Through December 31
A look at the role and process of creativity in the field of engineering. Miami Museum of Science and Space Transit Planetarium. 305/854-4247.

The Lamps of Tiffany: Highlights from the Egon and Hildegard Neustadt Collection
Wilmington, Del.
Through January 2, 2000
More than 45 objects provide an overview of the achievements in glass by the Corona, N.Y., workshops of the Tiffany Glass and Decorating Co. Delaware Art Museum. 302/571-9590.

The Work of Charles and Ray Eames
New York City
Through January 9, 2000
A retrospective of the work of these midcentury pioneers of design. Cooper-Hewitt, National Design Museum. 212/849-8400.

The Corner Store
Washington, D.C.
Through March 6, 2000
An exhibit tracing the history and cultural impact of a vanishing American typology: the local grocery. National Building Museum. 202/272-2448.

Build Boston
Boston
November 16–18
America's largest AIA chapter holds its annual convention and tradeshow for the building industry. World Trade Center Boston. Call 800/544-1898 or register online at www.build-boston.com.

At Home in Chicago, Part II
Chicago
Through November 28
An exhibition of different types of housing designed by Chicago architects. The Art Institute of Chicago. 312/443-3600.

Atelier van Lieshout
North Miami, Fla.
Through December 5
Visitors to this exhibition of the work of the Dutch collaborative—designers of mutant mobile homes and sensory deprivation units—get to enter a few of the firm's creations. Museum of Contemporary Art. 305/893-6211.

The Sense of the City: Louis Kahn's Design for an Office Building in Kansas City, 1966–73
Manhattan, Kans.
Through November 28
An exhibition featuring Louis Kahn's drawings and models centered around institutional and public architecture, as well as his design for the unbuilt Kansas City Office Building. Beach Museum of Art. 785/532-7718.

Big Buildings
New York City
Through December 31
This exhibition explores a dimension of the skyscraper just as impressive as its height: sheer volume. The Skyscraper Museum. 212/968-1961.

School Architecture of Perkins & Will
Chicago
Through December 5
An exhibition of school designs by the Chicago-based firm. Chicago Architecture Foundation. 312/922-3432.

AIAS Annual Convention: Forum '99
Toronto
November 24–28
This year's convention of the American Institute of Architecture Students—the first to meet outside the U.S.—features speakers Michael Graves and Moshe Safdie, as well as the Career and School Fair. Royal York Hotel. 202/626-7472.

The Work of Daniel Libeskind
New Haven
Through November 20
An installation featuring the design and construction processes of the Jewish Museum in Berlin and other new projects. Yale Art & Architecture Building. 203/432-2292.

Two Views of Venice
New York City
Through December 19
An exhibition of rare etchings of Venice by Canaletto and Mortimer Menpes. Cooper Hewitt, National Design Museum. 212/849-8400.

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Rambusch: The Art of Craft
New York City
December 7 to January 1, 2000
A look at 100 years of the interior arts produced in the Rambusch family's lighting studio and workshop. National Arts Club. 212/475-3424.

A Way Station
New York City
Through November 13
An architectural critique of the temporary space of the migrant. Storefront for Art and Architecture. 212/431-5795.

Alvar Aalto's Private Residences
Albuquerque
Through November 30
An exhibition of the legendary Modernist's residential work, photographed by Jari Jetsonen. University of New Mexico. 505/260-0433.

Constant's New Babylon
New York City
Through December 30
The first major U.S. exhibition of Constant Nieuwenhuys' magnum opus, an urban utopia imagined through models, paintings, films, and sound. The Drawing Center. 212/219-2166.

Competitions

Architecture in Perspective 15
Submission deadline: December 6
The American Society of Architectural Perspectivists announces its annual drawing competition. Entries can be made in two categories: formal drawings and informal sketches. Among the awards will be the Hugh Ferriss Memorial Prize. Winning entries will be included in a traveling exhibition. For more information, call 202/737-4401.

The Dryvit International Design Competition
Submission deadline: December 1
Dryvit Systems Inc., a manufacturer of exterior insulation and finish systems, is seeking entries in the annual Dryvit International Design Competition. A $5,000 first prize will be awarded to the architect whose work best reflects the design freedom Dryvit provides in the building process. The winning design will also be featured in a two-page spread that will appear in the February 2001 issue of ARCHITECTURAL RECORD. 1/800/4DRYVIT. ■

Please submit information for the calendar at least six weeks prior to the magazine's publication date (November 15 for the January issue).

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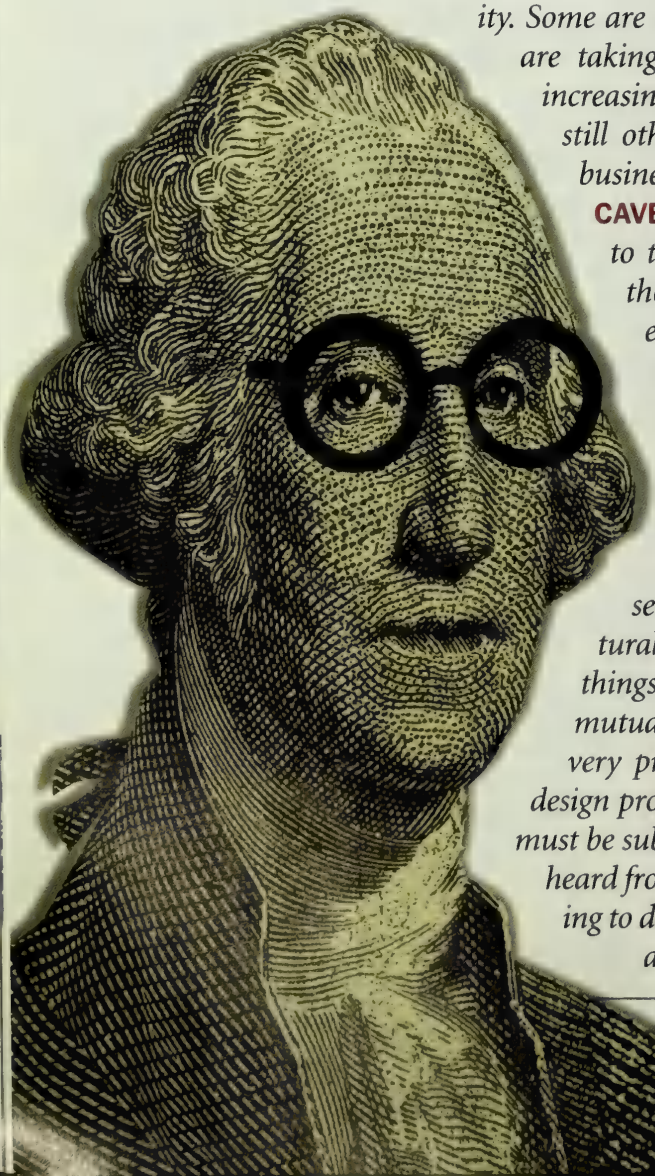
THE FEE DILEMMA PART II:

How to Increase Your

by Elizabeth Harrison Kubany and Charles D. Linn, AIA

These are busy times for architects. The irony of today's hot construction market is that even as firms are walking away from projects and actively recruiting new talent, fee levels are as tight as ever. To stay afloat in the recession of the early 1990s, firms cut their fees and clients became accustomed to paying less for the same work. Although the costs of doing business have gone up, architects have realized that they cannot wait for clients to accept higher fees. Instead, they are actively thinking up new ways to serve their clients and market themselves that will enable them to increase profits even as fees decline. Architects are using a variety of strategies—ranging from progressive visions to more conventional wisdom—to increase their fees and improve their profitability. Some are adding services to position their firms in the marketplace or are taking paths that diverge from traditional practice; others are increasing their fees by selling clients on the notion of added value; and still others are improving their profitability by instituting simple business practices.



CAVEAT: *Not all strategies apply to all architects. Some are suited to traditional design firms while others would appeal only to those interested in assuming certain kinds of risk. You are encouraged to read the following and pick and choose the suggestions that might apply or appeal to you. As Gray Plosser of KPS Group in Birmingham, Ala., says, "This is a battle architects fight on multiple fronts. There is no one lightning bolt."*

In 1989, the American Institute of Architects published In Search of Design Excellence, *a book based on a series of roundtable discussions involving several key architectural thinkers and practitioners. The book concluded, among other things, that doing high-quality work and making money are not mutually exclusive, that design-award-winning firms can also be very profitable. This contrasts with the time-honored notion that design projects—which demand more time and may exceed budgets—must be subsidized by "bread-and-butter" work. Based on what we have heard from more than two dozen architects, we are convinced that having to decide between making money and making good architecture is a false choice. It is possible—and preferable—to do both.*

1 Breaking Out of the Box

ees in a Tough Market

1 BREAKING OUT OF THE BOX

There are architects who are reclaiming their piece of the financial pie by creating new business models that rely on nontraditional services, such as site selection, development, financing, design-build, construction management, and facilities management. Some firms even take an equity position in their projects to ensure that they are built. In some cases, these firms spin off separate businesses that handle only these ancillary services. In others, the firms act as turn-key operations.

CASE STUDY NONTRADITIONAL SERVICES: OWP&P

"One of the markets where we have been able to innovate is the elder-care market," says Gary Wendt, AIA, CEO of O'Donnell Wicklund Pigozzi & Peterson Architects (OWP&P) in Chicago. "Our clients are frequently the lay boards of independent, nonprofit organizations. They don't have support from a centralized organization and generally have no experience with building projects. We often found ourselves being asked to provide front-end services to assist those clients."

OWP&P created the Continuum Group, which does nothing but strategic and financial planning for this market. The Continuum Group hired a hospital administrator and another person who had experience running an elder-care facility. Both had strong business and financial backgrounds and related well to the clients because they had worked on the client side for many years. According to Wendt, "They can answer the clients' questions about the logistics of getting their projects built better than the architects in the firm."

There are numerous benefits to this proposition. "When we have provided the front-end services before the architectural commissions," Wendt says, "we are able to complete the architectural work properly and profitably because we don't have to spend any of our architectural fee on nonarchitectural work. Even if we aren't sure there will be an architectural commission at the end of this predesign phase, we still provide this service. We are paid on a fixed-fee basis and almost always make money on these services. But even more important, if our client has enjoyed the relationship, they are very likely to hire us for the architectural portion. Providing this service puts us in front of the client. Because part of this service involves educating the client about the total building process and the scope of work involved, the client is then in a position to make an educated decision about the value of the architectural service we will provide."

Spin off

Although this business model is exceptional and quite progressive for the architectural profession, many architects are thinking out of the box as a defense. Competition in the profession has grown ever fiercer as specialists invade the territory once occupied by architects alone. Sometimes, the architect recognizes the opportunity before the specialist gets there. Rather than wait for someone else to take over the market, the architect capitalizes on the speciality first. This approach requires an inclusive view of architecture. While many architects—particularly "designers"—tend to narrow the scope of services they provide, those thinking out of the box are constantly adding new services to their definitions.

CASE STUDY SPINNING OFF: LOEBL SCHLOSSMAN & HACKL

"I'm constantly trying to think of what our clients will need tomorrow," says Donald Hackl, FAIA. Over the years, Hackl's Chicago firm, Loebl Schlossman & Hackl, has seized many opportunities to provide services for clients that extend beyond the bounds of traditional architectural practice, including design-build and a division that helps its clients relocate. The newest venture is the Performance Group, whose goal is to integrate information technology into the workplace.

"There are many technology providers cropping up out there," continues Hackl. "I was concerned that these emerging specialists might become the client's prime consultants, taking the lead in defining how a place works. The architects would be hired as subcontractors, just to put a skin around the technology. Our goal was to take the initiative."

And it turns out that the inherent skills that architects have developed in listening to clients and using their input to write programs has given the Performance Group a competitive advantage over several giants in the information services industry. Recently, the Performance Group was selected over AT&T, Ameritech, and Cisco Systems to "wire" an entire community in Illinois. "They selected our group," says Hackl, "because we offered them an

2 Realizing Your Value

3 Updating Conventional Wisdom

Competitive bidding of architectural, engineering, and other consultant services for a project is usually not in the Owner's best interests . . . The best way to buy almost anything—certainly professional services and construction—is on a relationship basis. —George T. Heery, FAIA, The Brookwood Group

agency relationship as opposed to a vendor relationship. As their agents, we sat down with them and helped them determine what they consider optimal for their community. As architects, we were used to the idea of customizing something that would meet the requirements. I look at this as electronic urban renewal. We wire a district or a town, and that leads to upgrading buildings to accept technology infrastructure."

For Loebl, Schlossman & Hackl, developing new businesses allows the firm to take itself beyond its competition. "If you shift the client's understanding of what the end product can be, you are no longer considered the same as traditional design firms," Hackl says.

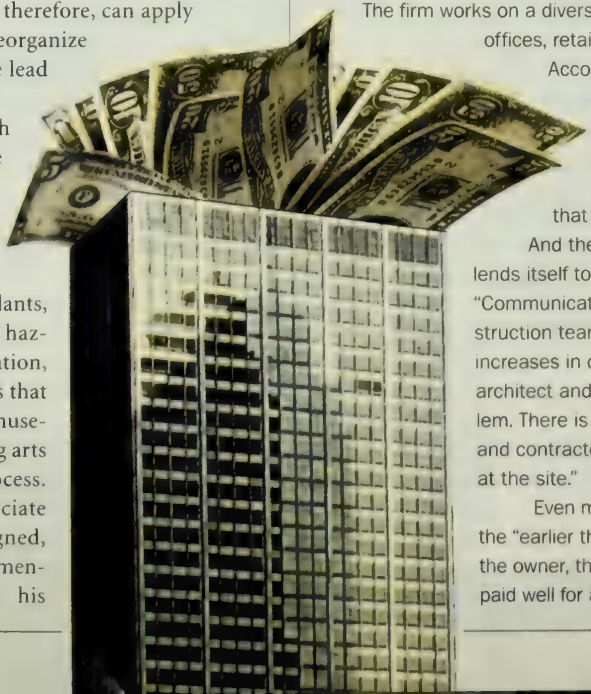
Turn the key

Mark C. Friedlander, an attorney in the Construction Law Group of Schiff Hardin & Waite in Chicago, believes that design-build provides "an opportunity for architects to return to the status of master builders . . . designer-led, design-build allows the architect to reclaim status and control, returning the profession to its historic role as leader of the construction industry."

CAVEAT: Design-build is not for everyone. Christopher R. Widener, AIA, of Widener-Posey Architects in Springfield, Ohio, predicts that "design-bid-build won't go away, but it will become the less traditional mode of project delivery." Still, he feels that architects may be left behind because the entity leading the design-build process needs to be bonded. "Very few architects are capable of being bonded because architects treat their companies as service businesses where the profits come out at the end of the year. Contractors, on the other hand, are product oriented. They build assets and, therefore, can apply for bonding. Architects would have to reorganize their businesses to be eligible to take the lead in this arena."

CAVEAT: There is another issue with design-build. At present, simpler, more straightforward buildings that are schedule-driven make ideal candidates for design-build. In August 1999, *AIArchitect* listed the top five markets for design-build projects: industrial plants, refineries, warehouses, commercial, hazardous/toxic waste treatment, transportation, and solid waste treatment. Building types that might be more design driven—such as museums, theaters, civic centers, or performing arts centers—are less suited to this process. Consequently, many architects associate design-build with cheap, badly designed, undesirable buildings. But it is worth mentioning that Widener believes that his buildings are better as a result of the expanded role they play. And his profitability is many times what it would be if his firm were a traditional design practice.

During the past six years, Louis & Henry Group, an architecture firm based in Louisville, Ky., has added construction management and real estate development divisions. Rick Kremer, president of the firm, hopes Louis & Henry will become a "one-stop shop" for clients. He claims that the money brought in by the other divisions helps pay for the large amount of time spent on the design process. To prove his point, he compared the new fees and profits for architecture, construction management, and development and found that architecture allowed for a 6 percent profit on a 4 percent fee, construction management allowed for a 20 percent profit on a 5 percent fee, and development a 50 percent profit on a 6 percent fee.



CASE STUDY DESIGNER-LED CONSTRUCTION: BUCHANAN YONUSHEWSKI GROUP

In 1989, Brad Buchanan, AIA, and his partner, John Yonushewski, AIA—both licensed architects and licensed general contractors—formed the Denver-based firm, Buchanan Yonushewski Group LLC. From the outset, Buchanan and Yonushewski decided to make leading the construction process part of their mission. They brought all general-contractor capabilities in house, hired construction superintendents, obtained full contractor's liability insurance, and learned to do estimating and pricing. In addition, during the past two to three years, they have brought in some trades—such as carpentry, painting, and drywall.

The firm works on a diverse assortment of project types—including offices, retail, multifamily housing, and banks.

According to Buchanan, the partners have worked on perfecting the process and making it adaptable to any project. "If the market changes," he says, "we could apply what we have learned to any sector that is strong."

And the more complex the project, the more it lends itself to this designer-led construction process. "Communication between the architect and the construction team becomes more difficult as the project increases in complexity. Because we are both the architect and the contractor, we don't have that problem. There is no finger-pointing between the architect and contractor; we can solve any problem that arises at the site."

Even more important, Buchanan has found that the "earlier the architect can get into discussions with the owner, the better the chances of being selected and paid well for a job. We have the ability to speak to our

clients in languages other than the language of design, so we are sometimes invited into the boardroom to help make decisions—about site selection, facilities, financing, and other front-end issues. We become the client's partner and are there when the project actually happens." Buchanan stresses that these skills are totally learnable; "I learned at the school of hard knocks," he says. Today, the Buchanan Yonushewski Group acts as general contractor for 90 percent of its projects; the other 10 percent are built by outside contractors.

According to Buchanan, the firm's profits are five times what they would be if they only did design. "The profit margin for construction work is much, much larger than it is for design work. This allows us to do more up-front work and spend more time on the design without worrying about losing money."

And this has a very positive effect on the quality of the firm's work. "There is no question that our buildings are better because of our designer-led-construction method. We can subsidize extra design with the construction dollars. In addition, the people doing the design work closely with those who know how the building will go together. Then, because we are the ones designing and building, we essentially give our clients free on-site construction administration. It has had an unbelievably positive impact on the quality of the final project."

2 REALIZING YOUR VALUE

In his book, *Competitive Advantage: Creating and Sustaining Superior Performance* (The Free Press, 1985), Michael E. Porter explains, "Competitive advantage grows fundamentally out of value a firm is able to create for its buyers . . . Value is what buyers are willing to pay, and superior value stems from offering lower prices than competitors for equivalent benefits or providing unique benefits that more than offset a higher price." So there are two types of competitive advantage: cost leadership and differentiation. The notion of comparing and purchasing architectural services on the basis of cost is fundamentally flawed because the services, relationships, and products firms provide are never the same.

Since the consent decrees of 1972 and 1990, one of the biggest problems architects have faced is being compared to each other as commodities. Clients who shop for architectural services based on price are operating under the assumption that "all architects are equal." Architecture firms can create competitive advantage, or value, by differentiating themselves from other firms.

CAVEAT: The top 1 percent of the profession—the "star architects"—does not have to be concerned with adding value. Their signature designs and the cachet they bring to a project allow these architects to command higher fees than most of their fellow professionals. Unfortunately, there are only a handful of architects who fit this description. Other firms have had to differentiate themselves on the basis of other services—besides design—that they can offer a client.

It's all in your relationships, baby

The answer to the question of how to create value seems to lie in one word: relationships. If architects create and maintain relationships with their clients, the clients will come to understand the value of the services the architect provides. As a result, the architect can charge more.

George Heery, FAIA, of The Brookwood Group in Atlanta, who frequently acts as an owner's representative, advises his clients not to require competitive fee proposals when purchasing architectural services. As he says, "Architectural and engineering services have a very high content of intellectual services and a very low content of commodity delivery. Conversely, a construction contract has a very high content of commodity delivery ("brick and mortar") and a relatively low content, in dollars, of intellectual services. It follows that competitive bidding of architectural, engineering, and other consultant services for a project is usually not in the owner's best interests . . . The best way to buy almost anything—certainly professional services and construction—is on a relationship basis."

Good relationships lead to higher fees. "Time and time again, our firm has provided architect-of-record services for Cesar Pelli, Kohn Pedersen Fox, Robert A.M. Stern, and many others," says Ron Brame, AIA, of HKS Architects in Dallas. "We compete against other architects that provide similar services, and our fees are frequently the highest. We have been able to convince clients that our services warrant a higher fee."

Practice makes perfect

According to the *1997 AIA Firm Survey Report*, 86 percent of firms say repeat work is their most reliable method of acquiring new business; next comes referrals, mentioned by 64 percent of firms; personal or professional contacts, listed by 55 percent of firms; and firm reputation, say 42 percent of firms. Requests for qualifications ranked a distant fifth, listed by 17 percent of firms.

Repeat work is the most reliable way of getting new work for one reason—say it with me—relationships. Once you have established a relationship based on trust and service with a client, that client is far more likely to understand the value you bring to a project and to hire you for the next one. As KPS' Gray Plosser says, "chasing one-off projects all the time is not a great way to make money," because the marketing costs are formidable and because entering into a project with a new client makes you an unknown quality, unable to charge on the basis of value.

Stop selling aesthetics

"Architects are selling something clients don't want," says Michael Alost, AIA, of the Shreveport, La.-based Slack Alost Miremont and Associates. "Clients want help with the building process—financing, site selection, developing a business plan; they want their projects on time and on budget; and they want the building to enhance their business goals. Good design, for many clients, is a bonus."

Architects believe their value lies in their ability to deliver design

As architects, we must assume that we are facilitators and integrators whose role is to do whatever the client needs. Anything and everything the client needs should be considered an architectural service. —Michael Alost, AIA, Slack Alost Miremont and Associates

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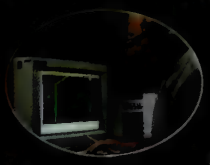

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but, according to Alost, "an architect's value lies in the ability to give the client what he needs." Most clients, says Alost, have design at the bottom of the list of things they need.

"When you understand the underlying business goals of the client to such an extent that what you do is enhancing their competitive advantage, the building isn't an end, it is a means," Plosser explains. "This differentiates you in the marketplace and is worth something to the customer. When you come to understand the customer, they come to understand you and become your advocate."

Almost all of the architects we interviewed define value this way: Value is having the experience and insight to understand your client so well that you can actually improve his or her business. Plosser goes so far as to define professionalism this way. He believes that clients sometimes perceive that architects' loyalties are focused on their art rather than on the person who has hired, and is paying, them. To Plosser, "true professionals put the client's needs above their own."

CAVEAT: This approach severely deemphasizes the importance of the built product in favor of the building process. Understandably, many people in the profession would disagree vigorously. Architects are taught that the quality of the built environment is paramount. In fact, many people become architects because of this conviction. And the most important and most visible architects in the world are, in fact, selling aesthetics.

According to Alost, however, "when you realize that you are out to sell service, and design is a tool to deliver service, that allows numerous opportunities for you to take a leadership role. We must start assuming that we are facilitators and integrators whose role is to do whatever the client needs. Anything and everything the client needs should be considered an architectural service."

Vive la difference

As we just stated, it is entirely understandable that some firms might have a difficult time letting go of the notion that design alone is what they have to sell. If that is the case, firms should try to differentiate their design. "We made a conscious decision several years ago to sell our design, not our service," says Don Hackl. "We try to show our clients that, just as no two individuals are the same, no two architectural practices are the same. We demonstrate, by example, how the quality of the design that we invest in our projects impacts the client."

Value your staff

One way to keep costs down is to hire lots of recent graduates, but John Gering, AIA, of HLW International in New York City advises architects to resist the temptation: "We do hire the most talented junior people we can find, but we can't flood the office with them and expect them to provide the level of quality our clients need, and quality is what we're selling." Hackl estimates that it takes about four weeks of off-the-clock training to teach a new employee all the procedures that are used at his firm. "We are using training as a means of empowering many people in the firm to make decisions on their own," he says. "If we spend less time talking about what we are going to do, we will do it faster."

Highly trained staff is one of any firm's most valuable assets, but it is intangible. To provide superior service, everyone working on a job must understand their client's needs. Heavy employee turnover may erode a client's confidence in the service being provided. In addition, the quality of documents and observation are bound to suffer.

CASE STUDY **CREATING VALUE: HLW INTERNATIONAL**

Like most firms, HLW believes that its work is thoughtful and contributes to the emotional and financial well-being of its clients. Atypically, though, the firm has set out to quantify the value of its work through a program it calls PPR—Project Performance Research/Reporting.

The beginnings of this undertaking were relatively modest. For many years, as part of the firm's standard procedure, a group of strategic planners and programmers—trained not in architecture but in business or human behavior—would gather information about the client at the beginning of a project to inform the design. Then, 12 to 18 months after the client moved into the new building, the same team would conduct a postoccupancy study. According to Susan Boyle, AIA, a partner at HLW, "there were lessons in this for us and for our clients. It was particularly useful in long-term relationships; we learned what we had done well and what could be improved for the next time." Then, about two years ago, Boyle and her colleagues took the idea a step further with PPR and hired a dedicated staff of behavioral scientists. The process goes something like this: the project team introduces the concept at the first client meeting. If the client is interested, a second meeting—with the human-behavior expert, the programming staff, and the partner-in-charge—is held. Then the PPR staff works with a client representative to customize a questionnaire to the

The profit margin for construction work is much, much higher than it is for design work. This allows us to spend more time on the design without worrying about losing money. This has had an unbelievably positive impact on the quality of the final project.

—Brad Buchanan, AIA, Buchanan Yonushewski Group

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We try to build relationships with core clients and offer incentives for them to spend money with us, instead of taking the work to other firms. —Susan Boyle, AIA, HLW

client's needs and organization type, and the client distributes this questionnaire throughout his or her organization. The data is then collected and analyzed. Twelve to 18 months after occupancy, the same questionnaire is distributed and the data is compared.

Boyle says her firm is trying to quantify the extent to which "the design can affect the client's bottom line. We are dedicating resources to show how the built environment affects business—how people interact, which adjacencies are effective, how many sick days employees take, and how recruiting and retention are impacted." While the idea is still in its infancy, Boyle already calls it "an investment HLW has made to validate its work."

Focus, focus, focus

In this age of specialization, it is becoming increasingly difficult to remain a generalist. A firm has much less trouble convincing a client of the value it can bring to a project if it has several similar projects in its portfolio. The firm has a proven track record and, therefore, will lose less time and money on research.

Ron Brame discussed his firm's ability to get better fees based on specialization. "Among other things, one of our focuses is designing space for the commercial lease market," he says, "and we sell our knowledge of the aesthetic and functional issues involved with making space attractive to prospective tenants. We're selling our technical expertise as well as the knowledge that our clients will be able to sell the building to their clients."

Repetition can also equal profitability for a firm because the learning curve for each job is shortened. Probably the most extreme example of this is a firm specializing in big-box retail stores that can deliver documents for a new one in 36 hours.

CAVEAT: Although experience with a given building type inspires client confidence, beware of firms that simply stamp out the same product time and time again. The challenge for the architect who depends on a kit-of-parts approach is to keep designs from becoming mundane or repetitive.

Be expansive

By expanding their scope of services, architects can increase the life span of relationships with clients. This can involve everything from setting up preprogramming and facilities management groups to simpler strategies. For instance, HLW—one of America's largest firms—takes the attitude, surprisingly, that no job is too small. Stan Stark, AIA, says, "We work with organizations that have many, many small projects that require the same attention as larger ones. It would not be affordable to give them the level of service they require if we were doing only one of these projects. So we work with clients on a continuing basis under a master agreement; we can keep a small core team that can serve all of the projects, pool reimbursables, share details, take advantage of redundancies, and find efficiencies." Susan Boyle of HLW feels that this approach adds value for the client: "We will try to build relationships with core clients and offer incentives for them to spend more money with us, instead of letting them take the work to different firms."

CASE STUDY

PUT YOUR MONEY WHERE YOUR MOUTH IS

Some firms are able to establish value for clients on the basis of exceptionally fast project delivery and the ability to meet strict budget targets. After establishing a reputation for such feats, they may be in a position to bump up their fees by negotiating incentive contracts. The basic principle involved in all incentive contracts is essentially the same: the front end of the contract basically covers the cost of doing the work. At the back end, the architect and contractor risk their profits to create an incentive to meet the schedule and fee goals. Sometimes, the amount of the bonus is based on a contingency fund that is the difference between the owner's originally budgeted sum for the job, minus the construction-contract price established after documents are finished. In other circumstances, the bonus is a flat fee split between contractor and architect.

Owners like incentive contracts because they can encourage teamwork between the architect and contractor. Architects are motivated to keep costs down, and the contractor's profit is based on meeting building deadlines. Some architects have argued that these incentive contracts based on schedule and budget alone could encourage corner cutting. HLW International and Sordoni Skanska Construction Company challenged this notion a few years ago when they built a lab for Ciba-Geigy in Tarrytown, N.Y. Members of the design/construction team were so confident that they could meet the time and budget requirements and make the users happy that they risked their profit on the outcome of a user survey. A poll of scientists and support staff taken six months after the building was occupied rated the building very highly in terms of user satisfaction, and HLW and Sordoni Skanska collected on the bet. Not every architect we interviewed would be willing to take such a risk. Said one, "I wouldn't do that unless I could have the time to work with many of the client's staff members on programming and design development. Without that investment in time, you never get buy-in from the people who are ultimately going to answer the survey."

CAVEAT: Doctors complain that managed care undermines their professional judgment because essentially unqualified people make decisions about care based on business rather than years of experience. An analogy can be drawn to incentive contracts. The best buildings may cost more money to build and take more time to complete. Focusing on first cost and schedule may distract from important long-term performance considerations such as ease of maintenance and energy efficiency. Andy Pressman, AIA, author of *The Fountainheadache*, makes the following analogy, "If a heart transplant gave you two more years of life, instead of five, would you pay the doctor only two-fifths of his fee?"

Let every eye negotiate for itself

It may sound like psycho-babble, but understanding your own value is empowering. Once a firm understands and can communicate the nature and the worth of the service it provides, it will *(continued on page 198)*

A Lens into the Gardens of Le Nôtre

Photographer Becky Cohen's images of Louis XIV's mid-17th-century gardens at Versailles, Vaux-le-Vicomte, and Parc du Sceaux capture landscape architect André Le Nôtre's passion for transforming the wild randomness of the earth, water, and woody plant materials into strictly formal, polygonal tableaux. So vast were the gardens that Le Nôtre feared they would discourage visitors from exploration, so he used his knowledge of optics and perspective to visually foreshorten them. Yet, even with this visual trickery at play, Cohen's photographs reveal how this landscape architect transformed the woods into a quiet yet powerful message from the Sun King himself: that he could totally dominate nature and the world with his vast resources. *Charles Linn,* AIA

Double row of conical topiaries at Versailles, 1994.

Opposite. Still fountain at Parc du Sceaux, 1994.

Square-cut allée at Parc du Sceaux, 1993.

Above: Square-cut allée in winter at Parc du Sceaux, 1993.

Right: Square-cut allée in spring, 1993.

Above: Stairs in the Potager du Roi at Versailles, 1994.

Left: Within the Orangerie at Versailles, 1993.

Above: Canal, trees, and reflection at Vaux-le-Vicomte, 1995.

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PUBLIC HOUSING IN 1999:
A Hard Assessment

A $200 million plan to tear down high-rises, build thousands of housing units in low-rise buildings, and create a mixed-income community at Cabrini-Green in Chicago is stuck in neutral. While private development has begun just outside the project, the hulking presence of a 19-story apartment building still towers over a desolate landscape.

FOR THE LAST SEVEN YEARS FEDERAL AND LOCAL AGENCIES HAVE APPLIED NEW URBANIST IDEAS TO THE TASK OF REMAKING PUBLIC HOUSING. THEY CAN SHOW SOME SUCCESSES, BUT THE NUMBERS JUST AREN'T BIG ENOUGH.

PHOTOGRAPHY: © SCOTT MCDONALD/HEDRICH BLESSING, EXCEPT AS NOTED

by Blair Kamin

The third in a series of articles on efforts to transform public housing, this special report provides an overview of progress that has been made in some places and the shortcomings of HUD's program to replace high-rise projects with low-rise, mixed-income neighborhoods. Over the past seven years, HUD and local housing authorities have engaged architects and planners, especially those from the New Urbanist camp, to rethink housing for the less affluent people in our society. Previous articles looked at plans to redevelop Cabrini-Green in Chicago [February 1997, page 84] and offered a follow-up on that project [September 1997, page 62].

To grasp what architects are up against in the fight to transform the nation's public housing, come walk around the Henry Horner Homes on the Near West Side of Chicago, just north of the United Center, where Michael Jordan once thrilled crowds with his soaring slam dunks. A few blocks northwest of the arena, the goal of turning troubled housing projects into thriving communities is proving painfully elusive.

A year and a half ago, the optimism was palpable as former residents of five demolished high-rises at Henry Horner moved into brick rowhouses with front stoops and other trademark features of New Urbanism. Yet now, hope has given way to concern that the rowhouses, built on the very superblock where the towers once stood, may simply have replaced a high-rise ghetto with a low-rise slum.

Take the boarded-up, five-bedroom apartment at the corner of Hoyne and Maypole streets. A few weeks after a fatherless family moved in, children playing with matches accidentally started a fire that engulfed the apartment. It was "the first to go south," says John Tuey, the Chicago Housing Authority's (CHA) redevelopment manager at Henry Horner. Another apartment, a few doors away, allegedly harbored drug dealers that the housing authority has now evicted—but only after a year of court fights. Encouraged by the long delay, drug-dealing gangs have infiltrated the neighborhood, brazenly gathering on stoops that were supposed to give tenants a place to watch out for illicit street activity.

The result: Intimidated residents are moving out. One-fourth of the apartments on Maypole Street—9 of 36 units—are vacant. And there are fears that the problem will spread like a bad case of the flu, sending the entire 380-unit complex of townhouses and rowhouses

RECORD contributing editor Blair Kamin is the architecture critic of the Chicago Tribune *and the 1999 recipient of the Pulitzer Prize for criticism.*

R E P O R T

Here's one sign that architects have helped transform Milwaukee's once-troubled Hillside Terrace housing project into a normal neighborhood: When the NCAA Midwest Regional men's basketball tournament was held last spring in the nearby Bradley Center, fans parked their cars and sport utility vehicles along Hillside's lushly landscaped streets and walked to the stadium.

New Urbanist principles were instrumental in the turnaround of the 15-acre, 494-unit development. That should come as no surprise because Milwaukee mayor John Norquist, perhaps the leading New Urbanist among U.S. mayors, became personally involved in the redesign. He insisted, for example, that front porches be big enough for chairs so residents could both talk to passersby and supervise the sidewalks. Architecture "has a big effect," Norquist says. "All of a sudden people want to live there. You get competition for renting apartments, so then the housing authority can reject people who have criminal histories."

Once a prototypical superblock with a maze of dead-end streets that made it easy for drug dealers to escape from police, Hillside was remade from 1994 to 1998 using a $44.6 million federal grant. To encourage informal surveillance, the plan by Larsen Engineers of Milwaukee restored streets that had been eliminated from the hilly site.

To make the apartment buildings resemble single-family homes, the engineers graced Hillside's faceless two-story brick buildings with porches that, by virtue of their different colors, lend each part of the development its own identity.

In the same New Urbanist vein, Aldrian Guszkowski Architects of Milwaukee designed individual entrances for Hillside's three-story buildings, interior renovations, and an expanded community facility. The latter now provides a range of social services, from day care to job training. To reduce density, more than 100 apartments were demolished; replacement housing was built in the surrounding neighborhood while some residents used vouchers to find new homes.

To be sure, the renovation did not confront the dire obstacles typical of Chicago and other large cities. Indeed, when Milwaukee applied for a federal housing grant, a top HUD official told Ricardo Diaz, director of Milwaukee's housing authority: "The stuff you're tearing down is what we're building in Chicago."

The results have been dramatic. Today, 61 percent of Hillside's households have at least one person who works, compared to 15 percent in 1993; Wisconsin's tough welfare-to-work law, no doubt, contributed to this improvement. The number of arrests at the development has plummeted to 36 in 1998 from 132 in 1994. "No one who comes here from out of town thinks this is public housing," says resident leader Ann Wilson. "They think it's a smaller suburban community."

Attention to detail was critical in reshaping Hillside and keeping it in good condition. Dumpsters that once spewed trash onto the street were hidden behind brick walls. And Milwaukee's historic street lights, which have distinctive acorn-shaped fixtures, were brought back, replacing Modernist globes that practically said, "hit me," according to Diaz.

While Hillside hasn't succeeded in transforming the area around it—the goal of later, more ambitious HOPE VI projects—it has made a major difference in the quality of residents' lives. Now, instead of gunshots at night, they hear the bells of the Good Humor truck. *Blair Kamin*

lurching into chaos. In response, the housing authority has approved a radical new management, social services, and policing plan for Horner, where still-to-be-demolished towers loom menacingly over the new homes. "We want to reintegrate public housing into the community," says John Roberson, the authority's chief of development. "We're not going to sit here and lose the war because of problem tenants and burnt-out units."

When a wrecking ball tore into the Horner high-rises on August 11, 1995, then-U.S. Department of Housing and Urban Development (HUD) Secretary Henry Cisneros issued this prophecy, "As goes public housing in Chicago, so will go public housing for America." Today, his words have come true, though certainly not in ways that Cisneros or his successor, Andrew Cuomo, would have hoped.

Seven years into a noble experiment to transform the nation's crime-plagued, public-housing projects into normal neighborhoods, the visions of vibrant communities sketched by architects and planners are running headfirst into daunting obstacles—and ferocious gangs like those at Henry Horner are the least of those hurdles. Simply put, a nation enjoying one of its greatest periods of prosperity has little time or money for the poorest of the poor. HUD's total budget for fiscal 1999, $27.7 billion, is less than half what it costs American taxpayers to fund the mortgage-interest and real estate tax deductions—which chiefly benefit the middle class and the wealthy.

So while HUD can point to public-housing success stories in places like Baltimore, Milwaukee, and Atlanta, these efforts have yet to achieve a critical mass. For every tale of transformation, delays have caused thousands of homes to go unbuilt. And there are equally unsettling questions about poor people who have optimistically left the projects with Section 8 rental-assistance vouchers in hand only to relocate to neighborhoods just as dangerous and segregated as the ones they left.

Worse, in Chicago, which has the nation's heaviest concentration of problem projects and is thus a potent political symbol,

New rowhouses at the Henry Horner project, designed by Solomon Cordwell Buenz, engage the street with stoops (above right). But some units are already boarded up (above left), owing to fires and gangs.

R E P O R T

In 1935 President Franklin Roosevelt traveled to Atlanta to dedicate the country's first public housing project. Constructed on a site cleared of slums, Techwood provided temporary housing for needy families—a leg up until they could move on to their own version of the American dream.

Over the years, the housing project devolved into a welfare sinkhole. Efforts to rethink it moved at a glacial pace. Then Atlanta won the 1996 Olympics. The prospect of the media focusing on the glaring disparity between the housing project and the Olympic village across the street at Georgia Tech goaded all parties into action.

Developed by the Integral Group and McCormack Baron Associates, the 60-acre property, which includes Techwood and the adjacent Clark Howell Homes, is the first project in Atlanta to be transformed under HOPE VI. The old buildings were razed, and Centennial Place with 758 flats and townhouses is rising instead: 40 percent rented at market rate, 40 percent rented to welfare recipients, and 20 percent to those with Section 8 vouchers.

Only 10 percent of the original residents have returned. Many were relocated to their satisfaction during construction, and others couldn't meet the stringent new requirements, which include having a job or being in school or job training. "Those who were displaced were fairly relocated," says Dennis Goldstein of the Atlanta Legal Aid Society, who represented some of the families. "My concern is that the new requirements favor working families and don't help the neediest—the elderly and the disabled, among them."

Those who have stayed are supported with a network of service providers, offering day care and job training. "It's a big transition and it's hard," says Diane Bellem, family support director of a nearby day-care center. "But agencies and the community are working to create a safe and stable neighborhood."

Unlike the gated communities sprouting up all around the city, Centennial Place is open. The main challenge, says Jon Carlsten of Carlsten, Pucciano & English, was to reinstitute the city grid lost when the projects were built in the 1930s. The design vocabulary of the new buildings is taken from the New Urbanist playbook: front doors facing the street and walks leading up to them, pitched roofs and porches.

Developer Egbert Perry's vision of bringing together multi-income families seems to be working. Centennial Place is fully leased. And it is changing lives. Ask Andrell Crowder Jordan, one of the 74 original residents who moved back. She had opposed redevelopment but is now convinced it's the only way to attack the welfare mentality. "If you continue to warehouse people, you get the same result," she says. "This is a continuing rebirth, and I'm not just talking about the buildings." *Catherine Fox, visual arts critic for the* Atlanta Journal-Constitution

HUD's efforts are foundering, particularly at the notorious Cabrini-Green development. There, a bitter battle between resident leaders and officials has put the most ambitious mixed-use plan for public housing in the nation on seemingly permanent hold. The legal logjam is a political embarrassment for Cuomo, who needs dramatic turnarounds to persuade the Republican-controlled Congress to save HUD and the public-housing reform program from the budget ax.

Housing plus help in becoming self-sufficient

Heralded by agency officials as a major pillar supporting the Clinton Administration's policy for urban America, the reform program is formally known as HOPE VI, which stands for Housing Opportunities for People Everywhere. (The program is now in its sixth phase, which explains the use of the Roman numeral.) It aims to replace decaying public projects with new housing and to help long-time welfare recipients get education, training, and jobs to become self-sufficient. Much of the new housing is built on the New Urbanist model, which advocates a traditional way of making cities through standard-size blocks, pedestrian-friendly streets, and mixed-use neighborhoods.

"HOPE VI has helped us understand the importance of human scale and mixed-income [housing]," says Nicolas Retsinas, the director of the Joint Center for Housing Studies at Harvard University. Yet "it would be wrong to think that HOPE VI is the functional equivalent of a housing policy for poor people in the United States. HOPE VI is constrained by simple numbers . . . I don't think HOPE VI *hasn't* made a difference. But a difference is not the same as the answer."

When Congress created the program in 1992, the federal government classified 6 percent of the nation's public-housing stock, or roughly 86,000 of 1.3 million units, as "severely distressed." That definition referred to developments plagued by crime, obsolete mechanical systems, and high vacancy rates. Invariably, these projects were laid out in superblocks that followed the Modernist paradigm, developed by Le Corbusier, of separate towers in parklike settings. But as short-sighted federal policies packed these buildings with chronically poor people, rather than those temporarily down on their luck, they became isolated clusters of poverty, breeding everything from high crime to low test scores. Today, about 2.7 million Americans live in public housing.

Since the early 1990s, HUD's policy has been brutally straightforward: Bring in the wrecking crews. As Cuomo explained in announcing a $35 million grant to demolish the Stella Wright Homes, the last high-rise public housing project in Newark, N.J.: "When public housing makes the statement of exclusion and isolation, President Clinton has said, 'Tear it down and don't repaint it, put in new windows or new fences.' It had the wrong intent from the beginning and should be replaced with smaller, low-rise, low-density places where people to want to live."

Yet that has proved easier to say than to do—at least in great numbers, particularly because HUD's funds are limited by a president and Congress who constantly court the middle class. Since 1992, 53,000 units have been approved for demolition under HOPE VI, but only 20,000 actually have been torn down, according to the agency. Moreover, just 5,600 homes have been built or renovated nationwide—less than the 6,000 units of public housing built from 1958 to 1962 in a notorious stretch of high-rises along Chicago's State Street. Compare the 5,600 HOPE VI units with the 2.3 million housing starts and sales generated by

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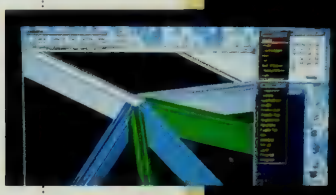

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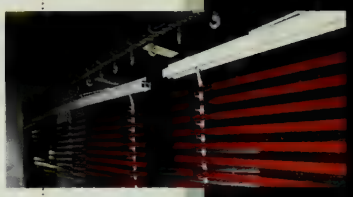

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CIRCLE 36 ON INQUIRY CARD

R E P O R T

On a hot summer morning in 1996, 20,000 people gathered in West Baltimore to see the city's housing authority blow up Lexington Terrace, a slum of 667 units lodged in a mix of high-rise and low-rise buildings.

Lexington Terrace's replacement, a HOPE VI project, which is almost half complete, will have 302 rowhouse units—100 for sale, the rest for rent—and a midrise building with 88 apartments for seniors, a community center, and a 30,000-square-foot business center.

"It's a neighborhood, rather than a project," says Serena Morris, a former Lexington Terrace resident who recently moved into a rowhouse. "My children can play in their own backyard without getting shot at. It feels much safer."

Public funding for the $78.4 million project came from HUD's HOPE VI program, the Housing Authority of Baltimore City, and Fannie Mae. Private lenders provided $19.3 million in mortgage money and loans. Baltimore's housing authority manages the rental units, while Cooperative Services Inc. runs the senior housing.

The remaking of Lexington Terrace, says John Torti, president of Torti Gallas-CHK, the architecture firm in charge of the project, was a team effort involving the developer, a social scientist, a psychiatrist, financiers, realtors, and prospective residents. The developer itself is a joint venture, involving three building companies—Stuever Brothers, Eccles, and Rouse Inc.—along with Mid-City Financial.

Following New Urbanist principles, the project tries to fit with its red-brick surroundings and form a "mixed-income, mixed-use, mixed-age, mixed-financing, mixed-everything neighborhood," in Torti's words. Baltimore-style stoops mediate between private and public space. Some units have porches; all have private backyards and access to a park and public transportation.

Instead of mimicking details of old rowhouses, the architects used their scale, proportion, and massing. To prevent the barrackslike appearance of most inexpensive two-story apartments, the designers stretched the buildings upward by about 60 inches, raising the floor slab by about 30 inches and adding height to the attic. They varied the facades but made no distinctions between rental and for-sale units.

But "it's only bricks and sticks," says Torti, explaining that without social programs the place would probably soon decline into a slum again. Social services, such as day care, counseling, and job training, are available, and every renter gets a built-in computer workstation plus a free computer, computer training, and Internet access.

What happened to those from the old project who couldn't qualify for its successor? The housing authority can't track former tenants, says Wesley, but Baltimore accommodates all who need housing—at other projects, through Section 8 subsidies and through private charities. While the tenant-selection process prevented some old residents from returning, Torti says the majority is better off in a community that excludes troublemakers than in one that exerts no such controls.

Andrea O. Dean, contributing editor

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the Federal Housing Administration's mortgage insurance program at the tail end of the Great Depression and you see in bold relief how today's effort pales to that of a previous generation.

Among the reasons for the paltry output: From New York City to New Orleans, tenant leaders have delayed at least 15 projects, fearing

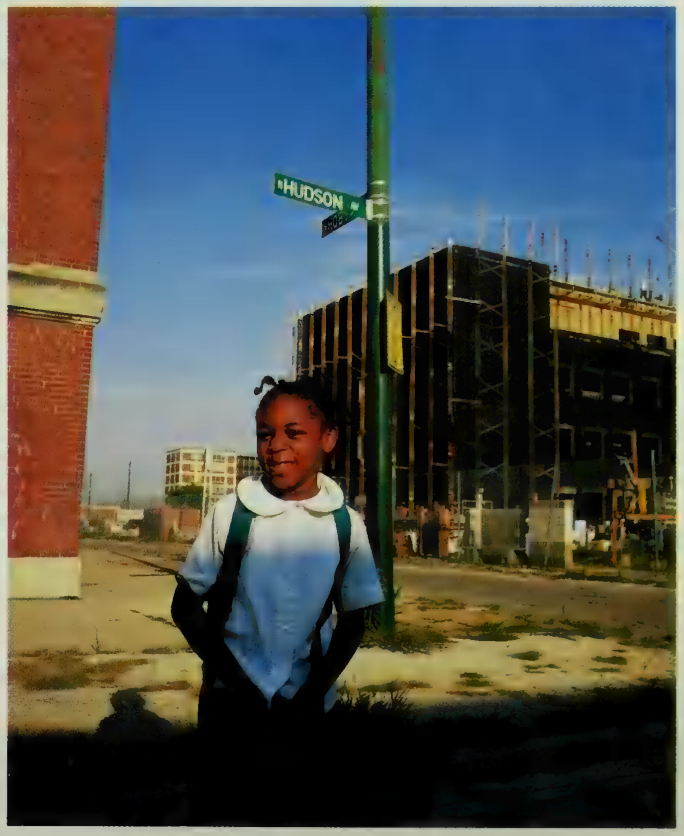
JUST 5,600 HOMES HAVE BEEN BUILT OR RENOVATED UNDER HOPE VI.

that "mixed-income housing" is bureaucratic code for kicking them off their land. At Cabrini-Green, where 2,300 units have gone unbuilt, $50 million worth of federal grants has sat idling in bank accounts for years.

"There are years of distrust and inappropriate action that have taken place," acknowledges housing consultant Gayle Epp of Abt Associates of Cambridge, Mass. "It takes a long time to create a dialogue where people feel comfortable. [Residents] have to take out all the baggage of the past. They have to beat and stomp on it before there can be a future."

To some extent, the delays are rooted in HOPE VI's evolution from a simple model of low-rise residences meant solely for public housing residents and financed only by the federal government to a more sophisticated approach that seeks to create entire neighborhoods attracting a range of income groups and funded by public and private sources. Used to the old way of doing things, residents have dug in their heels.

Yet when plans do go forward, design is, for the most part, working as a social tool, helping HUD achieve its goal of creating neighborhoods inhabited by the very poor, the working poor, and the middle class. Restoring streets that were lost to superblocks and allowing architects to break out of the one-size-fits-all straitjacket, the agency has come a long way from the days when public housing strove to stand apart—and



A new school is being built as part of the master plan at Cabrini-Green.

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CIRCLE 37 ON INQUIRY CARD

R E P O R T

At first glance, it seems that the master plan for Cabrini-Green, the nation's most ambitious attempt to transform a troubled project into a thriving neighborhood, is finally taking shape. A new park has sprouted on the eastern fringe of the development, which sits just north of downtown Chicago. The park has a green-and-yellow clock tower that beckons to yuppies who shop in a fashionable nearby district. And there's a fountain that shoots water jets into the air, entertaining motorists who once hit the gas as they drove by the notorious Chicago public-housing project.

Yet looming beside the park is something that doesn't appear in the New Urbanist plan prepared three years ago by a team that included Boston's Goody, Clancy & Associates [September 1997, page 62]. It's a 19-story, red-brick high-rise Cabrini residents call "the Rock." Windows in the vacant building are covered with reddish-brown wood bearing the stamp of the Muhammad Ali Board-Up Service. The towering eyesore "defeats the whole purpose (of the park)," says Chicago Park District instructor Marvin Tolbert, 37, who grew up in "the Rock," the oldest of six children.

In fact, all six red-brick high-rises that Chicago mayor Richard M. Daley wanted torn down are still standing. And not one of the townhouses and rowhouses that were to have replaced them has been built.

While tenant groups have tied up the project with lawsuits, real-estate developers are bringing luxury townhouses right up to the borders of the 65-acre, 3,200-unit island of poverty and fueling tenants' fears that they are about to be kicked off their land.

The legal logjam over the proposed $700 million redevelopment—which is to include schools, parks, shopping, and a police station as well as housing—isn't close to breaking up. And according to those familiar with the bitter battle between tenant leaders and housing officials, no end is in sight.

Just how long has the stalemate at Cabrini dragged on? When the federal government approved a $50 million grant for the project on November 30, 1993, the Dow-Jones Industrial Average closed at 3,683. At this writing, even after a steep drop, the Dow stands above 10,000.

Of course, Cabrini's impoverished tenants are unlikely to use such a yardsick. Gradually, they have been emptying out of the project; nearly half of its apartments are vacant.

True, Chicago can point to signs of progress at Cabrini. Near the park, for example, a new police building and two schools are under construction. There's even a faux Prairie School shopping center across the street from the park.

But with the towers still standing, the heart of the redevelopment plan—tearing down more than 1,300 high-rise apartments and putting up 2,300 low-rise units, including 700 for public-housing residents and 195 for lower-middle-class families—remains unfulfilled.

Without a legal breakthrough, Cabrini stands—more than ever—as a monument to failed hopes.
Blair Kamin

was supposed to look cheap to avoid offending American taxpayers.

From Baltimore's Lexington Terrace, where handsomely proportioned new homes evoke the city's 19th-century rowhouses, to Seattle's Holly Park, where townhouses are to have steeply pitched dormers and gables fit for the rainy Pacific Northwest, HUD officials are pushing quality—and contextualism—on a budget.

"The communities that are being created are beautiful, sustainable communities that do blend into the broader neighborhoods of a city," says Elinor Bacon, a HUD deputy assistant secretary and director of the HOPE VI program. "This is not special housing for a special sector of the population."

Agrees Chicago architect Chris Lee of Johnson & Lee, which has designed housing for the agency: "One of the great things that has happened to HUD is that—as long as you're within budget—you can have a lot of latitude. HUD understands now that it can't have a blanket aesthetic. What's appropriate for Louisiana doesn't work here."

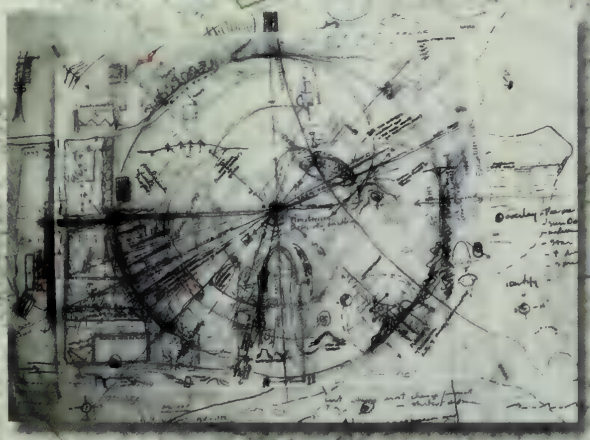
To be sure, some of the New Urbanist public housing—like the renovated brick apartment buildings at Milwaukee's Hillside Terrace, which are surrounded by lushly landscaped lawns—is neither new nor urban. Even residents of the 494-unit development north of downtown Milwaukee say it reminds them of suburban subdivisions. Yet that's the way neighborhoods in many American cities look today. It's the kind of housing that draws working families. That these projects are unlikely to grace the covers of design magazines is less important than their ability to attract a range of income groups—thus breaking up the pockets of poverty that sociologists say are at the root of the projects' woes.

"Design makes a huge difference," says Milwaukee mayor John Norquist, a leading proponent of New Urbanism. "It was harder to enforce the rules when no one wanted to live there."

Interiors—which must appeal to working families who can choose where they live—also have improved, with enticing features like central air-conditioning and washers and driers in utility rooms. Many apartments have thermostats that let residents control the heat in their apartments—a shift from the days when someone at a central heating plant determined how hot or cold it would be. On the whole, the quality of design and construction is on the rise—a key element in the effort to lift the stigma from public housing.

The old towers remain at Cabrini-Green, even as development starts nearby.

"There is no question that the program has created a sea change in attitude nationwide," says Joseph Shuldiner, former HUD assistant secretary for public housing. "The whole concept of mixed-income communities, which basically before was almost unheard of, is now pretty much accepted as the way to go." *(continued on page 200)*



In devising a plan for Sinte Gleska's new campus (this page), RoTo took cues from the tribal "star knowledge," or cosmology, as well as from the natural features of its prairie site (opposite): the topography, a creek and pond, and distant mountain views.

PROJECT DIARY On the Great Plains of South Dakota, ROTO ARCHITECTS helped reenvision a campus for Sinte Gleska, the first Native American university.

by Sarah Amelar

"What initially attracted me to South Dakota was the great scale of the landscape—the earth and sky," recalls Michael Rotondi, FAIA, of Los Angeles-based RoTo Architects. When Rotondi and partner Clark Stevens first drove down the straight stretch of Route 18 on South Dakota's Rosebud Sioux Reservation and caught a glimpse of an illuminated marquee flashing college course offerings, they could not have anticipated the cultural wealth they'd encounter behind it.

Rotondi and Stevens had come to the reservation to design a building for Sinte Gleska, the first Native American university, but their project acquired unexpected dimensions. Instead of creating one building, they ended up designing two and an entire campus plan. As architects, planners, researchers, economic think-tank operators, and occasional construction workers, RoTo took on the challenge of guiding the 1,600-student institution from its origins in trailers toward a more expansive and ambitious campus.

The process of reinventing the campus was complex, at times difficult. It is, after all, extraordinary that an institute of higher education formed, and flourished for 28 years, on a remote reservation in some of the nation's poorest counties—a place where unemployment exceeds 70 percent. Complicating matters, Rotondi and Stevens came to Rosebud as cultural outsiders, as white men from Los Angeles. "I kept wondering," says Stevens, "if what we had to offer was appropriate." At first, he recalls, "we were unable to ask the right questions, and the [Sicangu] Lakota people seemed unable to tell us what they wanted. Perhaps because nobody had asked them before, but more likely, they knew exactly what they valued and chose not to say. They felt, I suspect, in light of their cultural and life experiences that we were not to be trusted with that knowledge."

The architects realized they had at least as much to learn as to teach. They would need to earn their clients' trust in more profound ways than in typical architect-client relationships. The buildings they would ultimately complete—a student and a technology center—would stand as small pieces within the broader history of whites in Native American territory and the visionary tale of Sinte Gleska's existence and survival.

1971-1991

RoTo didn't arrive on the scene until 1994, but this story begins as far back 1971, when Sinte Gleska first opened its doors. Not yet a university, it began as the nation's second tribal college. (Today, there are 31 tribal colleges and universities.) Its founders saw a pressing need to reclaim the Sicangu Lakota culture at a time when Native American languages, lore, and rituals, across the country, faced danger of extinction.

Long before, white conquerors had forced these nomadic people onto reservations, lopped off the men's braided hair in an act of virtual castration, and insistently altered the native diet, replacing the Great Plains buffalo with cattle. Ultimately, boxy, federally funded housing substituted for tipis. The Black Hills, the Lakota tribes' most sacred site, had been taken from them and carved with American presidents' heads (at Mt. Rushmore). For decades, the U.S. government enforced assimilation by shipping Native American children to boarding schools that some graduates still describe as "prisons for young Indians"—and legally restricted tribal religious freedom. Even the oral tradition of storytelling, an essential and integral part of tribal life, was gradually slipping away.

Sinte Gleska College, named for "Spotted Tail," a 19th-century Lakota leader, began with humble means and lofty aspirations. One of its primary goals was to promote tribal autonomy, but obstacles lay in the path. Sinte Gleska's founding and current president, Lionel Bordeaux, a powerful-looking figure with strong Native American features and hair swept back in a style reminiscent of Elvis Presley, initially encountered opposition when he sought federal funds for the college.

Project: *Sinte Gleska University Technology Building*
Architect: *RoTo Architects Inc.—Michael Rotondi, FAIA, and Clark Stevens, principals; Michael Volk, project architect; Jim Bassett, on-site representative; Jim Bassett, Kenneth Kim, Michael Volk, collaborators; Carrie DiFiore, Qu H. Kim, Jarkko Kettunen, Craig Stewart, James Malloch Taylor, project team.*
Engineer: *Ove Arup & Partners (structural, mechanical, electrical); Dakota Railway Consultants Inc. (civil)*
Design consultant: *April Greiman*
Project management: *Bruce Biesman Simons*
General contractor: *Shingobee Builders*
Timber construction: *Paul Baines Timberframe Construction*
Concrete and rammed earth: *Native American Construction*

"Just forget higher learning," he was told. "You people would be better off doing arts and crafts—beadwork—or raising hogs." But Bordeaux saw education as a critical means for tribal triumph over adversity, and he persevered.

Sinte Gleska gained university status in the early nineties with bilingual courses in Lakota and English, ranging from tribal government to Lakota history, from much-needed human-services training to environmental sciences. The campus, sited in Mission, S.Dak., evolved with scant funding on an ad hoc basis: more trailers were simply added, as needed, along the way.

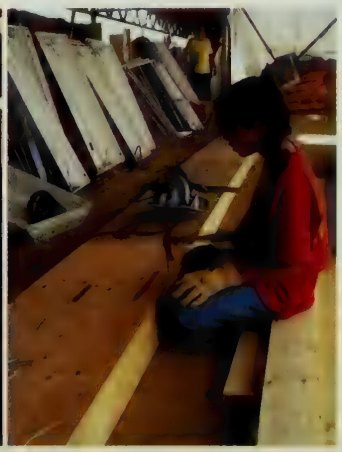
1991-1994

In the fall of 1991, a quasi-miraculous event befell Sinte Gleska. Patrick Lannan Jr., president of the Lannan Foundation, a family fund supporting contemporary art and literature, was driving cross country and stopped in unannounced at the campus. Lionel Bordeaux happened to be there and welcomed the visitors. Soon after, this encounter led to grants ultimately exceeding $10 million. (The visit also inspired the foundation's formation of its Indigenous Communities Program, which now supports Native American culture, language, and land reclamation, as well as tribal education.)

By March 1994, Lannan had invited Michael Rotondi—an architect he knew from the days when Rotondi headed the Southern California Institute of Architecture (SCI ARC) and the Lannan Foundation was its next-door neighbor—to travel to Sinte Gleska and design a building there.

The architects came away from that first visit with the conviction that Sinte Gleska University (SGU) needed an entire campus plan, not merely a single building. "They'd never had a chance," observes Stevens, "to define how their physical plant relates to their goals and view of themselves as a tribal college within the community." The Lannan Foundation agreed to hire RoTo to devise a strategic campus plan, but recalls Rotondi, "conventional programming meetings—trying to gather a lot of information from many people in neatly allotted parcels of time—just didn't make sense out there." Also, the community seemed to view RoTo with suspicion and distrust, based perhaps on past experience. The university's previous attempt to construct a major large-scale building had foundered 18 years earlier, due in part to loss of funds. This structure's unfinished hexagonal, concrete-block shell remained as a monument to its failure, leaving tribal members skeptical of RoTo's commitment to produce more satisfying results.

At an impasse, Rotondi and Stevens changed course. Conversation alone was not producing answers, so they decided to make something. Not a building of their own design, but a 16-by-24-foot straw-bale house for a tribal elder, a project akin to a barn raising, initiated and executed by tribal members. Stevens and another RoTo architect, Jim Bassett, spent a week on the reservation as construction laborers. They went to learn, not to direct, and, as their coworkers slowly opened up, they began to hear stories, jokes, and myths that would inform their architecture at Sinte Gleska.



RoTo's student center integrated prefabricated building modules (above left), stripped to their steel frames. Straw bales (above right and opposite left) became an infill wall, built by local junior high students. During construction, other tribal members honed such skills as timber framing and carpentry (this page, bottom).

The insulating straw-bale infill (left) was later coated with gunnite. An existing foundation and hexagonal concrete-block shell (above) were incorporated into the student center. The hexagon became an open-air gathering space with a firepit.

1994-1996

RoTo's campus-planning research took on a similarly informal character. The architects invited tribal members to dinners, listened to more stories, gained respect for what the Sicangu had already accomplished, and gradually heard the community's grievances with the existing campus. The current location, some suggested, blocked "spirit paths," and since the old campus lay on territory under civil jurisdiction (though on the reservation), it never really felt like tribal property. To find a new site, the architects journeyed across the landscape as elders explained the meanings of different locations. Finally, the university selected a site in Mission's adjacent twin town, Antelope, which lies on tribal land.

As the planning proceeded, RoTo embarked on its next SGU project, a student center, which Rotondi maintains, "We didn't intend on doing—but we decided we needed to build something right away." The tribe still seemed wounded by the unfinished-building fiasco 18 years earlier: Clearly, the typical two-to-three-year period of design and construction would not yield tangible results fast enough.

"We thought it would be good to show them, without delay, what they could do," says Rotondi, "with a little imagination, using materials and methods already available to them." For the student center, the architects encouraged the university to order four trailerlike, 12-by-60-foot building modules from downsizing Defense Department contractors. With no construction drawings per se, RoTo used the 18-year-old concrete-block shell as partial foundations, and straw bales coated with gunnite as infill for the modular frames. The construction crew consisted of SGU's maintenance staff, with local junior high school boys doing the straw-bale work. A disused tribal sawmill was gradually reactivated. This design-build project provided a year's employment for a mostly tribal crew and trained a local workforce to erect the next Sinte Gleska building.

Enthusiasm grew. "People started crawling out of the woodwork to see this funny thing going up on the 'Res'," says Rotondi. "And when the straw bales went up, there was joking that the cows would eat the building. When it was done, everyone seemed really pleased." One milestone in earning tribal trust was RoTo's decision to relocate architect Jim Bassett to the Rosebud Reservation to work on the project. Bassett stayed three years. "They said it was like sending one of our own into a hostile neighboring tribe," Rotondi recalls. "At that point, they saw we were serious."

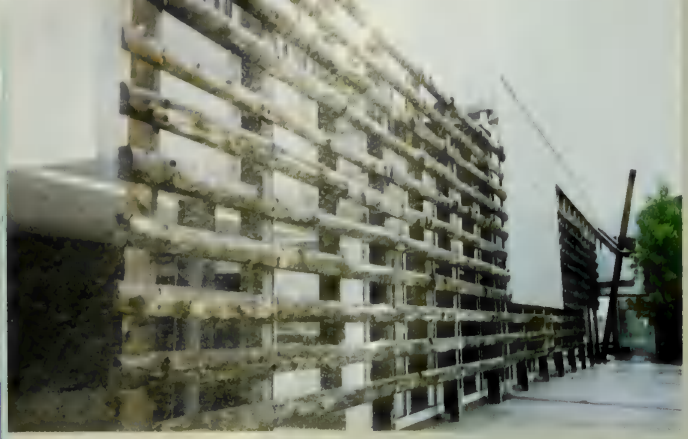
1996-1998

Meanwhile, RoTo Architects began to learn about "star knowledge"—an astronomy and astrology that shapes traditional Lakota worldview, religion, and everyday life—which inspired the campus plan. In this cosmology, the earth's features mirror the constellations. A Lakota symbol of the nature of the universe is the Kapemni: two cones joined at the apexes, representing the meeting of sky and earth worlds at the horizon. The tipi, with its crossed poles, embodies the Kapemni. Each spring, for three months before the equinox, this nomadic people would make a ceremonial journey, following the sun's path through constellations corresponding to sacred Black Hills sites. The pilgrimage would symbolically reenact the creation of the universe. Throughout the year, star knowledge told tribes where to encamp. They drew imaginary lines emanating from constellations and sacred earth sites, placing importance on the points of intersection.

When the architects discovered that many young tribal members knew nothing of this cosmology, they resolved to make the campus plan an instrument of teaching, an embodiment of sacred stories and myths. Though the idea of creating permanent structures for a nomadic people may seem paradoxical, Stevens and Rotondi recognized the importance of the spaces between buildings. They sought to design a campus that would encourage its inhabitants to wander the territory and generate more stories. The selected site, however, was initially problematic because a boarding school had once occupied it and left painful associations. But the land also had sacred aspects—natural beauty, a creek and pond, and distant mountain views—and was finally accepted after a purification-by-fire ceremony.

At last, RoTo was ready to erect its first building on the new campus. Once again, however, the plans abruptly shifted course. Right after the architects had completed construction documents on a large multipurpose building—to include ceremonial assembly space, as well as athletic facilities—Sinte Gleska received a National Science Foundation (NSF) grant to refit an existing building with state-of-the-art computer technology for expanded general and computer science curriculums. The grant would upgrade a distance-learning program that the American Indian Higher Education Consortium had begun at SGU. Distance learning links tribal colleges by interactive live-video facilities—two-way broadcasting studios/classrooms—that significantly expand the course

The technology building's two pre-engineered standing seam structures are painted earthy brown to blend with the landscape, while the enclosed bridge reflects the steely sky. (Clad in zinc, this connecting element recalls the titanium-skinned Guggenheim museum in Bilbao, Spain.) The steel-skinned buildings were customized to eliminate the off-the-shelf eaves and impart the buildings with a more monolithic solidity.



A MAINE BOAT BUILDER TEACHES TIMBER FRAMING TO A TRIBAL CREW

The predominantly tribal construction crew crafted the building's wooden components with indigenous pine timbers. While working on the student center, RoTo learned of the reservation's deactivated sawmill and initiated its revival.

The mill had operated in fits and starts, corresponding to the sporadic nature of construction projects on the reservation. Since the beginning of work on the technology building, the sawmill has functioned almost continually.

Looking for local talent and skilled craftspeople, Rotondi and Stevens met Paul Baines, a Maine boat builder and experienced timber framer, who had worked on the neighboring Pine Ridge Reservation. Baines agreed to come to Rosebud, where he led a carpentry crew and taught timber framing.

For the technology building's smaller steel-skinned structure, to the east, RoTo experimented with a hybrid of readily available pre-engineered steel cladding and hand-hewn timber framing. Thus, the interior's pegged, nail-free joinery juxtaposes the exterior's standing-seam steel.

The architects also incorporated rustic half-sawn timbers, remnants of the squared timber-making process, into a brise soleil. *S.A.*

offerings at each campus. Unfortunately, no existing building was available, and the university risked losing the NSF grant.

Suddenly, a new technology building became the priority. The Lannan Foundation agreed to reallocate funds for RoTo to design it. To save time, the architects integrated into their scheme two pre-engineered steel-skinned structures, the type often used in agricultural and light-industrial settings.

The building's program breaks into two major components: labs or classrooms (including three interactive video studios) and public-oriented student-gathering areas with faculty offices. These components, respectively, occupy two steel-skinned structures linked by an enclosed zinc-clad bridge. Painted an earthy brown, the pre-engineered skins blend with the landscape, while the steely-gray zinc reflects the big sky. RoTo set out to employ as many tribal workers as possible, hiring craftspeople and foremen who were willing to teach construction methods. Given the steep learning curve for much of the workforce, the architects tried to schedule the most skilled tasks late in the construction process.

Like the campus plan, the 17,000-square-foot, two-story technology building drew inspiration from stars and planets and was conceived as a teaching tool. With the two steel-clad structures sited along the sun's solstice paths, the building's bridged cleft frames the summer sunrise and winter sunset. The connector, or bridge, follows the shape of a major constellation in plan, and its vertical panoramic window, like the Kapemni, reveals equal expanses of sky and earth.

The placement of windows and relative transparencies of materials allow the sun to track a course through the building. This relationship to the sun is especially evident in the interior's most inventive and sculptural elements: two slightly skewed stairways (one in the east structure and the other in the west) and an inverted tipi (on the east building's second floor). A lounge within a lounge, the tipi is clad in translucent rice-paper-like polycarbonate sheeting. When the rising summer-solstice sun and setting winter-solstice sun pass through the Great Pipe constellation (known in other cultures as the Big Dipper), the Lakota say it "lights the pipe," signaling the start of the ceremonial spring journey. When this celestial event occurs, the technology building's inverted tipi, like a pipe bowl, is lit by the sun. Its glowing form becomes visible to the outside through surrounding windows.

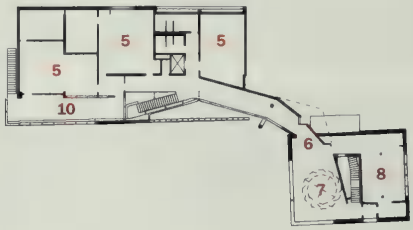
Because the west stair also stands along the solar path, RoTo gave it perforated risers to filter the sun's rays. Adding to the cosmological metaphors and alignments, the architects placed simple pendant halogen fixtures throughout the building's main circulation route in the configuration of specific constellations.

Whether the multiple celestial and poetic allusions will be experienced, or even noticed, remains an open question. With a nonjudgmental shrug, one laconic faculty member recently referred to the building's "gadgets—you know, the leaning poles, the tipi." Rotondi briefly considered making an explanatory booklet telling visitors exactly where to stand, but he now says, "I hope people will gradually start to decode the work like archaeologists, in the same way they read the land and sky. One day, someone may find him- or herself standing there at sunset and suddenly see all kinds of things."

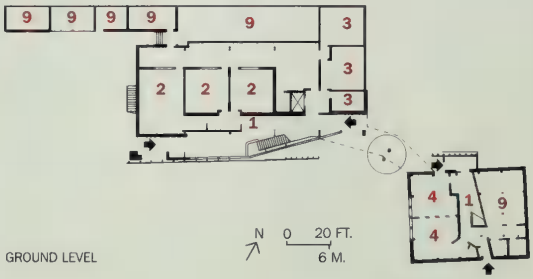
1998-1999 Completed in two years and dedicated in the spring of 1999, the new building with its technological offerings has generated much excitement on campus. An unprecedented number of Sinte Gleska students have flocked to the computer sciences department. Perhaps some day, through distance learning, the university will broadcast courses in Lakota studies, taught by its own

A timber brise soleil shades extensive glazing on the building's south face (above). Looking east from the west structure's roof deck (below), the inverted tipi—a lounge within a lounge—is visible. Its translucent skin glows with the setting and rising solstice sun, or when lit electrically at night.

1. *Lobby*
2. *Distance learning*
3. *Video*
4. *Classroom*
5. *Laboratory*
6. *Study lounge*
7. *Conference (inverted tipi)*
8. *Offices*
9. *Mechanical or utility*
10. *Roof terrace*

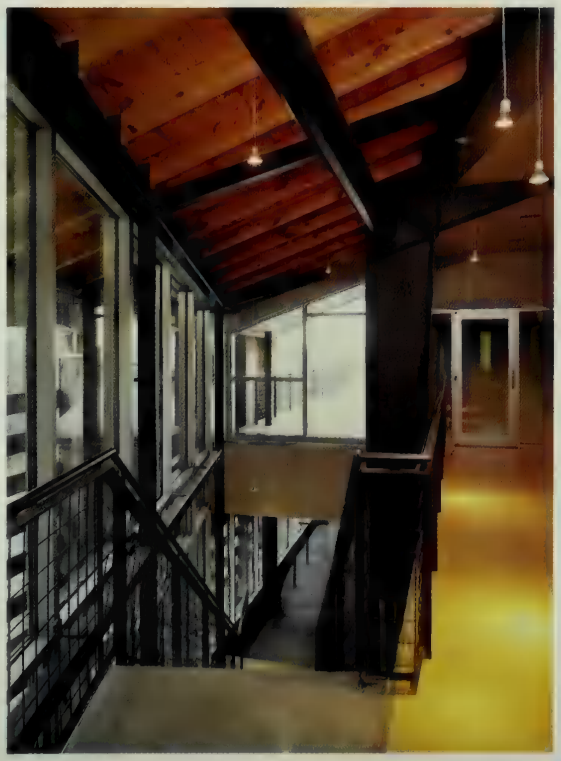


UPPER LEVEL



GROUND LEVEL

Over the technology building's main circulation path (below right and above), simple halogen fixtures hang in the configuration of constellations. The west stair's perforated risers (below left and right) filter the sun's rays. From the inverted-tipi lounge (opposite), prairie views unfold.



native experts, to nontribal universities across the country.

Though the potential of the campus plan and technology center are tremendous, it would be misleading to present them as cure-all solutions. The flip side of this bright new building is the challenge of attracting technical science faculty on tight salaries, overcoming student attrition, and covering the added operations and maintenance costs. To trim energy costs, RoTo purposefully gave the building a passive-solar orientation to the south with extensive glazing, an exterior brise soleil, and an interior rammed earth wall that acts as a heat sink. Nonetheless, the facility is large scale by SGU standards, and postconstruction expenses remain significant.

RoTo went on to clear a site for the large multiuse building, but partly in a cost-cutting measure, the university hired others to finish the job. "Our intent," says Stevens, "was always to set up something they could finish and implement on their own. They're the ones who'll live there and continue learning, long after we've gone."

Indeed, there is much beauty in what RoTo left behind: not only the buildings themselves, but also a revived tribal sawmill, a generation of newly skilled construction workers, and even some former junior high school students whose straw-bale work inspired them to enter building professions. There is talk at Sinte Gleska of starting a prearchitecture curriculum—to be linked with a professional degree program at the New York Institute of Technology (NYIT)—to train tribal architects.

Buffalo now roam the prairies around the new campus—Lionel Bordeaux brought in a herd as part of a campaign to reclaim the native ecology, its flora and fauna. The regenerative character of the campus is already palpable.

At a recent Sinte Gleska graduation ceremony, Rotondi was pleased to hear Bordeaux say, "This project is helping us rebuild a nation." But, ponders Rotondi, "I realized that architecture and social change don't move at the same pace. This is a slow, slow process. Yes, it's going to happen, but not in the time frame that I had in mind." ■

Sources

Metal building system: *American Buildings Company*
Metal roof and wall panels: *American Buildings Company; ACS*
Windows: *Kawaneer (aluminum)*
Acoustical doors: *Overly*
Polycarbonate sheeting: *American Acrylic Corporation (Lumasite)*

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The glass ramps on the north wall of the "nave" are illuminated at night by cold-cathode tubes set within the triangulated truss.

CRITICISM Modernism and contextualism meet at Bernard Tschumi and Gruzen Samton's LERNER HALL with provocative results.

The new student center stalwartly occupies the corner of the main campus between Butler Library (left in photo) and Broadway.

by Robert Campbell

Lerner Hall, the student center at Columbia University, can't make up its mind, in any simple way, about what it wants to be. That's its strength and also its weakness. Like the Roman god Janus, Lerner faces in two directions: out to the city on Broadway, and in toward the campus. On the city side, Lerner wants to be contextual, to be just another tall, handsomely uniformed soldier in what a university administrator calls the "stately half-mile long procession" of traditional Columbia buildings along Broadway. On the campus side, it wants to be companionable with the architecture and planning of the original McKim Mead & White campus of 1894, as well as to defer to the adjacent building, Butler Library.

But the Broadway wing and the campus wing are only bookends. In between them lies something entirely different. This middle section, Lerner Hall, aspires to be on the cutting edge of technology and to embody the talents and ambitions of its designer, Bernard Tschumi, AIA, dean of Columbia's School of Architecture, Planning and Preservation.

The result is a series of clashes of material and style. You can say Lerner Hall is the perfect and inevitable expression of the pluralism of our culture. Or you can say it lacks confidence in its own character. Maybe it doesn't matter.

Austin Quigley, dean of Columbia College, reasons, "We knew we'd lose either way, whether we copied the past or went all new. So we decided we'd learn how to do it both ways. McKim Mead & White is alive in the building. Bernard, too, is alive in the building."

George Rupp, Columbia's president, says: "We told the architects that the building had to be in the vocabulary of the McKim Mead & White plan."

Bernard Tschumi, AIA, explains the building another way. "I want to make a building do something, not look like something," he says, "I'm more into Duchamps than Matisse." He calls the McKim context a "ready-made"—an already existing presence he had to reckon with, the way Duchamps took everyday objects and made them art by framing and titling them.

The result is three buildings in one. Materials range widely: granite, brick, imitation limestone, glass-block masonry, and punched windows on Broadway; more masonry, including some nearly black units in the campus wing, and a spectacular glass wall and zigzag pile of steel-framed ramps as sandwich filling in the middle, in what you can't help thinking of as the Tschumi part of the building.

Further complicating the problem faced by Tschumi and Peter Samton, FAIA, of Gruzen Samton Architects LLP, was that they had to join the building with what president Rupp accurately calls "the extant but quite egregiously ugly building behind it," Carman Hall, a high-rise dormitory of 1958.

Poured into this extraordinarily diverse context is an extraordinarily diverse program. Lerner is 225,000 square feet of mixed functions: food service; party space; bookstore; auditorium big enough to seat an entire class (1,500 students), including a balcony for a cinema; plus an art gallery; radio station; black-box theater; box office; computer labs; offices for 90 student organizations; 6,000 mailboxes; a lot of student hang-out space; and a variety of services, including counseling and health education, along with the staff offices that support these offerings.

At Columbia, everyone begins any description of Lerner by citing the most prominent element of the old campus: the grand, south-facing outdoor steps of Low Library, the Spanish Steps of Columbia. "The Low steps are like an urban beach," says Rupp. "In late April and May they're just

Project: *Alfred Lerner Hall, Columbia University, New York City*
Architect: *Bernard Tschumi/Gruzen Samton Associated Architects—Bernard Tschumi, AIA, and Peter Samton, FAIA, principals*
Engineers: *Ove Arup and Partners (glass wall and ramp system, building services, fire); Severud Associates (steel and concrete)*
Consultants: *Hugh Dutton Associates (glass wall and ramps); Ove Arup (lighting); David Harvey Assoc., Peter George Assoc., theater acoustics*
Contractor/CM: *Barney Skanska Construction*

filled with people from top to bottom. You see the enormous diversity of this place all captured in one visual. The series of ramps at Lerner are a way of having the interaction of Low all year-round."

Columbia's student population, like that of other universities, grows ever more diverse. So the need to get students to meet one another, instead of withdrawing into various affinity groups, becomes stronger. Student services and clubs ("there's been an explosion of clubs, some 200 now, chess to fly-fishing," says an administrator) were formerly scattered all over campus. Gathering them in one building should encourage more student encounters, hopes Dean Quigley. Lerner isn't the only tactic he uses: Columbia undergrads are required to change dorms every year to encourage what Quigley calls "lateral mobility."

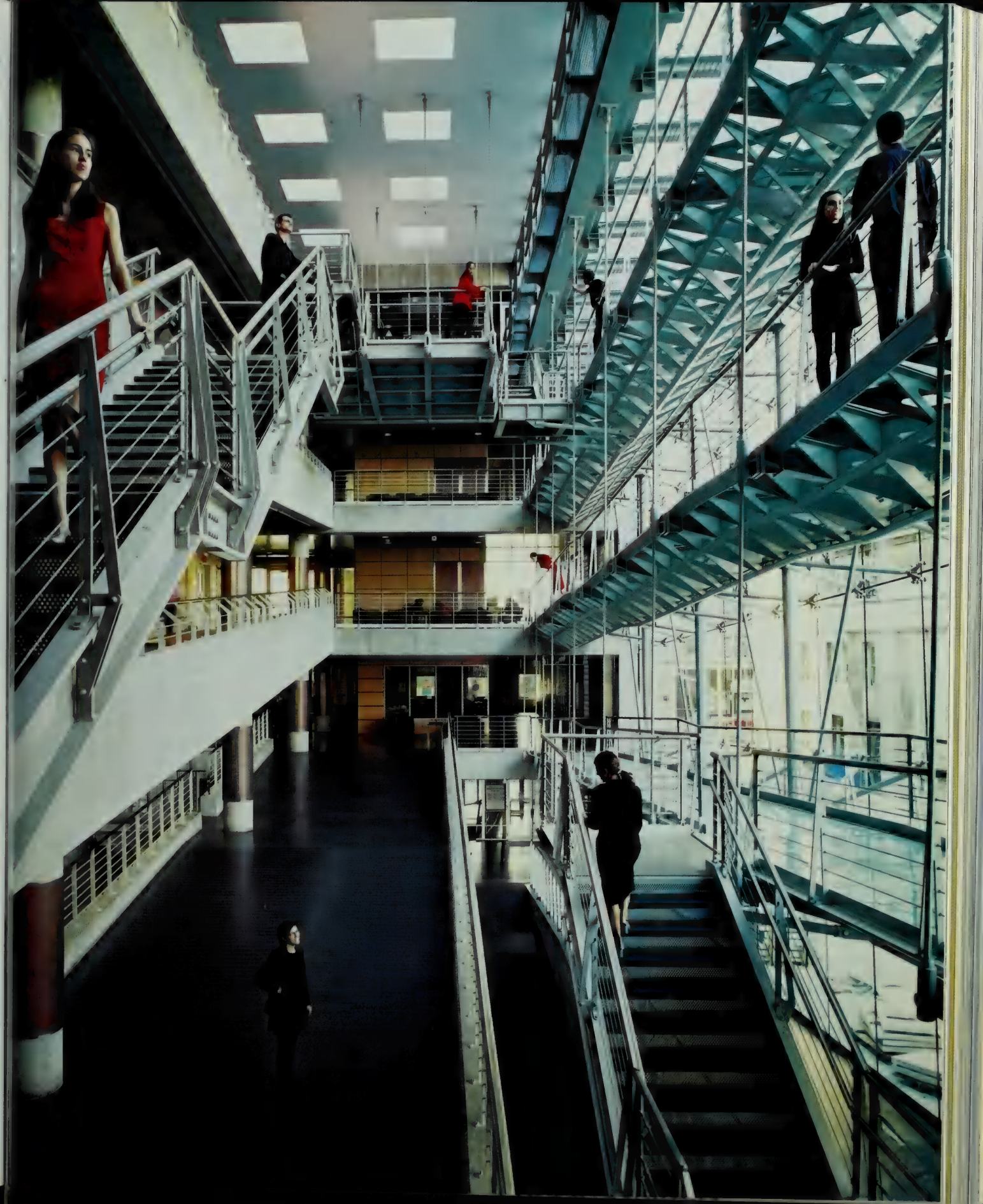
The pulsating heart of Lerner, the indoor equivalent of the Low steps, is the amazing ramp system. On a sloping site, Tschumi connects the two bookend wings with a criss-cross of ramps behind the great glass wall. Every student has a mailbox somewhere along the ramps. And you pretty much have to use the ramps, which are wheelchair accessible, to get from one part of Lerner to another.

The bet on the ramps is large: if they don't work, Lerner will be a flop. A big part of that bet is on the mailboxes. "It's where you go and bump into your neighbor. Sooner or later, everybody will see just about everybody," says an administrator. But will they? Or are the mailboxes hopelessly retro? Every student's grandmother seems to send E-mail these days. Even the university E-mails its students. Columbia estimates students on average will visit a mailbox several times a week, but they've done no survey, and one student thinks it would be more like once every two weeks. "Snail mail still plays a very important role," argues President Rupp. And it's true that student grades arrive in the mailbox.

Spatially, the ramps are spectacular. At night they glow from within, and students moving on them unwittingly perform, as Tschumi points out, a shadow play against the glass wall. The entire ramp-and-glass-wall assembly is high tech to the max. Huge, laminated 800-pound glass panels are joined at their edges by only thin beads of silicon. Each panel is supported independently by steel brackets—Tschumi calls them "claws" or "spiders"—that reach out from the ramps to grab the glass. The ramps, in turn, are supported by—indeed are part of—an enormous multistory truss system that spans the 60-foot-high atrium. The system was designed by Hugh Dutton, formerly of RFR; engineered by Ove Arup in New York; and fabricated by Eiffel in Paris. (Lerner is Eiffel's second New York building, the first was the Statue of Liberty.)

Tschumi describes the glass as the last word in transparency, but that isn't quite how it reads. So intricate is the steelwork of the ramps and trusses that what you get, instead, is a sense of enormous complexity. The feeling, as you walk the ramps, is that you're threading your way through a kind of architectural sculpture not unlike the great bridges of the industrial era, an erector-set world of struts and bolts and clamps and joints and turnbuckles, all the lovely stuff of life that the poet Gerard Manley Hopkins called "gear and tackle and trim." This is a rich, exhilarating experience, not at all the minimalist transparency Tschumi describes. Brightly lit through the north-facing glass, the ramps pull you onto them by a kind of tropism. Tschumi makes a good point about the ramps and their construction, too, when he points out that many architects considered avant-garde in a formalist sense are using ordinary drywall and other conventional technologies. Still, the glass may require a lot of maintenance: the turnbuckles, for instance, may need to have their tension adjusted regularly.

The center began as an expansion and renovation of Ferris Booth Hall by Gruzen Samton Architects. After George Rupp became Columbia's president, he wanted a new structure and brought in Tschumi to work with Gruzen Samton. The two firms "worked side by side" throughout the process, reports Peter Samton. The result is a three-part building: an eight-story brick and granite end facing Broadway (above left), a glassed-in ramp structure that accommodates the change in grade (left and opposite), and the four-story brick and granite end.

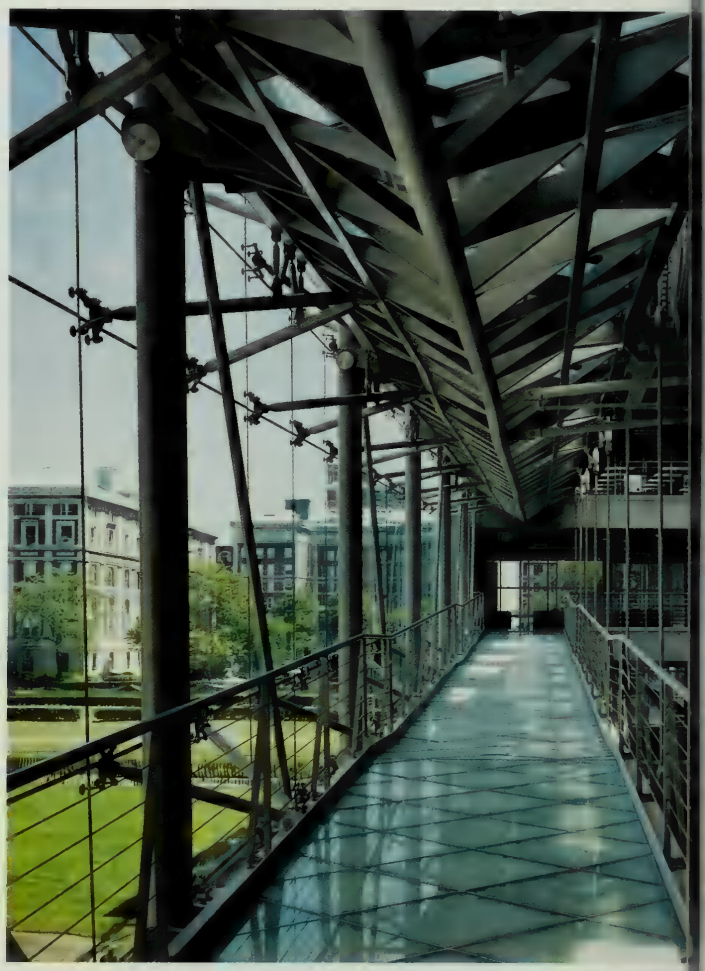


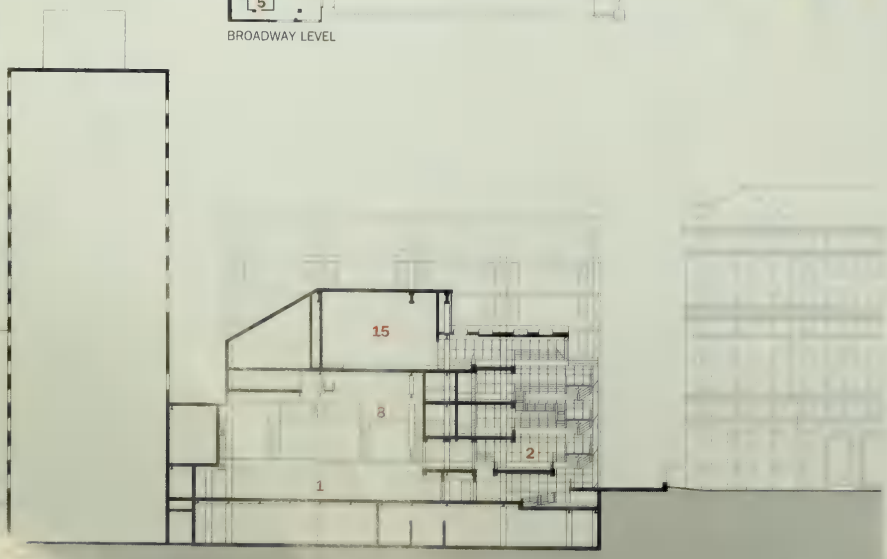
FIFTH FLOOR

THIRD FLOOR

BROADWAY LEVEL

1. *Auditorium*
2. *Campus auditorium lobby/Lounge*
3. *Bookstore entrance*
4. *Broadway auditorium lobby*
5. *Mail services*
6. *Main kitchen/Catering*
7. *Party space (second level)*
8. *Cinema/Auditorium balcony*
9. *Dining*
10. *Student mailboxes*
11. *Computer lab*
12. *Copy center*
13. *Double Discovery Center*
14. *Black-box theater*
15. *Multipurpose room*
16. *Lobby/Lounge*
17. *Conference rooms*
18. *Student clubs*

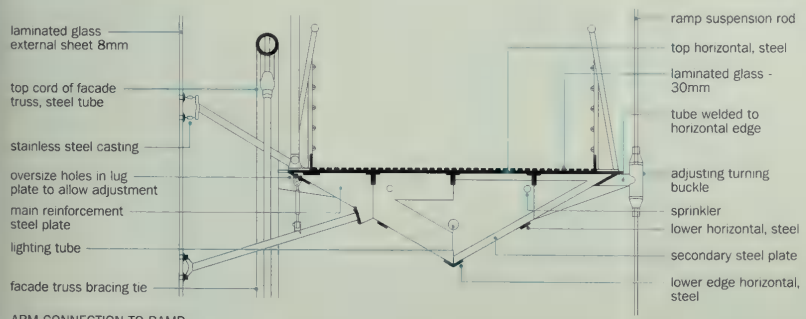




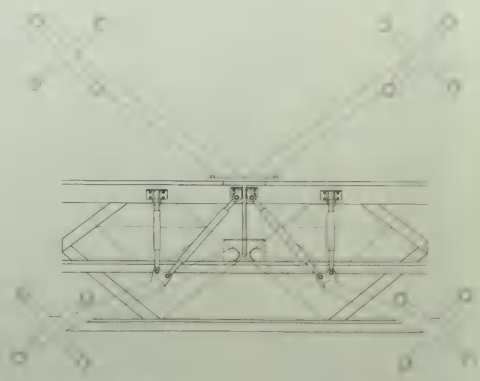
SECTION THROUGH AUDITORIUM AND LOBBY

The glass wall, which has no glazing bars, is a clear laminate fixed by bolt connections to the four-pronged claws of the cantilevered arm supports. The arms, in turn, are welded onto the ramps, supplemented by turnbuckles for adjustability. The claws convey the wind and dead loads from glass panels to the building through the ramps. For all the obsessive detailing, one lapse is obvious: The glass roof section was projected over the flush-glass facade without a suitable closure. An unsightly translucent compressible gasket had to be installed.

The steel ramp structure is suspended primarily from a truss system behind the glass facade. Paved in translucent glass, each ramp is formed from a triangulated truss made of steel plates (opposite). On the outer half of the ramp, hefty brackets transfer some loads to a three-story-high "facade truss," which is anchored from the top in the frame of the building. (It is the most visible element of the ramp system on the exterior.) Tubular rods (right), hung from a second massive truss that fills the triangular setback above the fifth floor, support the inner half of the steel ramp. Brackets and additional suspension rods hold up the stairs attached to the ramps. The ground level under these ramps is, therefore, column-free.

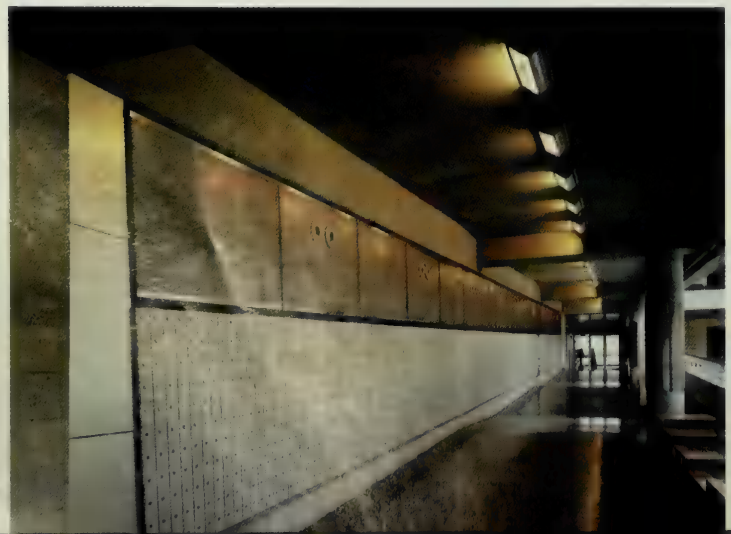


ARM CONNECTION TO RAMP



DETAILS OF SUPPORT ARM

Glass blocks line the corridor behind the bowed wall of the auditorium's balcony (above). Along the slope of the inner ramp are 6,000 student mailboxes (below) designed to follow the incline of the ramps and offer a counterpoint to the orthogonal grid of the concrete frame.



The auditorium (left) is designed to accommodate between 1,100 and 1,500 people, depending on whether the balcony is open. Lounges overlook the auditorium through glass in a seemingly sloping wall (below).

Tschumi speaks of Lerner as a return to the McKim campus plan, which originally called for pairs of similar buildings separated by quads. Except in one case, the campus developed in a different way, and no such pairings occurred. Tschumi believes his two bookend wings form such a pair, with the glassy ramp atrium reading as a void between them: the equivalent of a quad. This writer can't buy it. Neither in daylight nor at night do the ramps read as a void. Nor do the wings, of different heights, shapes, and materials, read as a pair. Perhaps if someone built a mirror-image clone of Lerner on the other side of Butler Library, there would be some recollection of McKim's Beaux-Arts concept. But there isn't now.

A couple of Lerner's other features also raise minor questions. The long wall along the Broadway sidewalk is blank except for two low canopied doors. One leads to the basement bookstore (like other college bookstores, it's also a Logo-land for tourists), the other to the auditorium (which will be, one supposes, usually locked). The blankness of the sidewalk frontage feels boring and defensive. "Columbia wants to be behind this wall," says Tschumi, and Rupp notes: "We take security very seriously. Columbia undergraduates feel completely safe inside the campus." Older Columbia buildings also have a slightly fortified look, to be sure. But perhaps, in today's less elitist world, Lerner might have been an opportunity for a more visually pervious relation to the city. Another problem is that Lerner often picks up details of the older buildings around it in a Postmodern way that sometimes is arbitrary. Along Broadway, for instance, the old granite bullnose string course is imitated by a pretty illogical (and, as it turned out, tough to build) bullnose course of glass block. The old parapets reappear in an uninteresting, radically stripped-down form. On the campus side, a truly weird cylindrical brick column is supposed to carry the theme of Butler Library around a corner. Indoors, one student complains that your brain starts to read the ramps as level and the mailboxes (which are vertical) as slanted (quite true), which in her case led to vertigo. But most users seem not to be bothered. A final problem is the depth of the floor plate. Few of the student clubrooms or staff offices enjoy any natural light or views: once you penetrate beyond the ramps, you feel you're in the back of the house. "Having windows these days in an office setting is an extreme luxury," said one administrator. (Tell that to the Germans.)

THE ATRIUM SHOULD READ AS A VOID, SAYS TSCHUMI. THIS WRITER CAN'T BUY IT.

Colors everywhere are bland grays, blacks, and whites. Tschumi says the students will bring the color, which I suppose they will—the typical Columbia student, according to Quigley, being "an independent intellectual maverick with a sense of humor."

The most intriguing thing about Lerner is the way the architecture reflects or embodies the program. The program says the building is supposed to mediate among different kinds of students, to mix and match them. The architecture is a similar mediator: between past and present, between a Beaux-Arts era and a technological new millennium, between Broadway and the inner campus. It's mix and match all over again. As observed at the beginning, that's the timeliness, the strength, and the weakness of Lerner—a good building that would be better if it were not contextual with a few too many contexts. ■

Sources

Suspended ramps and glass wall: *Eiffel Construction Metallique, Nanterre; New Jersey Window Sales*
Brick: *Pine Hall J*
Cast Stone: *Ariscraft*
Glass Block: *Pittsburgh/Corning*
Glass Block Panel System: *Circle Redmont*
Exterior/interior storefronts and curtain walls: *Leed Him*
Precast concrete: *DiSanti Concrete*
Granite cladding: *New York Stone*
Built-up roofing: *G.A.F.*
Metal: *Merchant and Evans*
Glass wall glass: *Sun Glass, Italy*
Ramp glass: *Saint-Gobain France*
Printed glass: *Cesar Color*
Other glass: *Viracon*
Skylights: *Naturalite*
Paneling: *Wilhelmi (acoustic wood panels); Alpro Acoustics (corrugated metal panels); Laminators (aluminum panels).*

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Getting there is half the fun: The museum's entry sequence (this page and opposite) offers a combination of tight thresholds and expansive outdoor spaces reminiscent of the walled gardens of Suzhou, China. The plan takes visitors on an indirect route that zigs and zags.

In Oporto, Portugal, Álvaro Siza's SERRALVES MUSEUM takes visitors into a majestic walled garden filled with art.

by David Cohn

The Serralves Museum, the latest work of Alvaro Siza is set on the grounds of a 45-acre estate in the western suburbs of Oporto, Siza's hometown and Portugal's second largest city. With its Art Deco mansion, formal gardens, romantic lake, woods, and fields, the formerly private estate embodies the latent aspirations of the surrounding landscape in many ways. Modern growth has largely bypassed the historic center of Oporto, extending instead westward across these verdant hills overlooking the Douro River and the nearby Atlantic Ocean. Dense new developments jostle for place among old villas, small industries, and languishing vegetable plots, overtaking winding rural tracks and turn-of-the-century suburban boulevards. This untidy but appealing landscape resembles nothing so much as a lush but neglected garden, like a forgotten extension of the Serralves estate itself, with labyrinthine paths, secret corners, and surprising vistas.

This image also makes a good metaphor for the work of Alvaro Siza, especially the 140,000-square-foot compound he has built to house the museum here. Like a garden walk, the visitor's path through the galleries is replete with branching routes, sudden turns, spatial clearings and pauses. At a deeper level, the relaxed idiosyncrasies of the local landscape offer important clues to the shaping of Siza's sensibility, his endlessly inventive approach to form, space, and light. Explorers of the Serralves Museum will be surprised and rewarded at every turn by his spare geometries and elegantly off-balance symmetries, and by the way daylight is reflected and re-reflected from walls and horizontal planes, creating an expansive, luminous containment of space.

Other unmistakably Sizian qualities are the slightly quaint, dignified air of certain proportions and materials in an otherwise Modernist vocabulary—the polished marble wainscoting of the lobbies and stairs; the heavy windows, framed in wood and steel—and the awkward, rustic grace of many details, such as the custom-designed furniture, the balustrades, and even the door pulls.

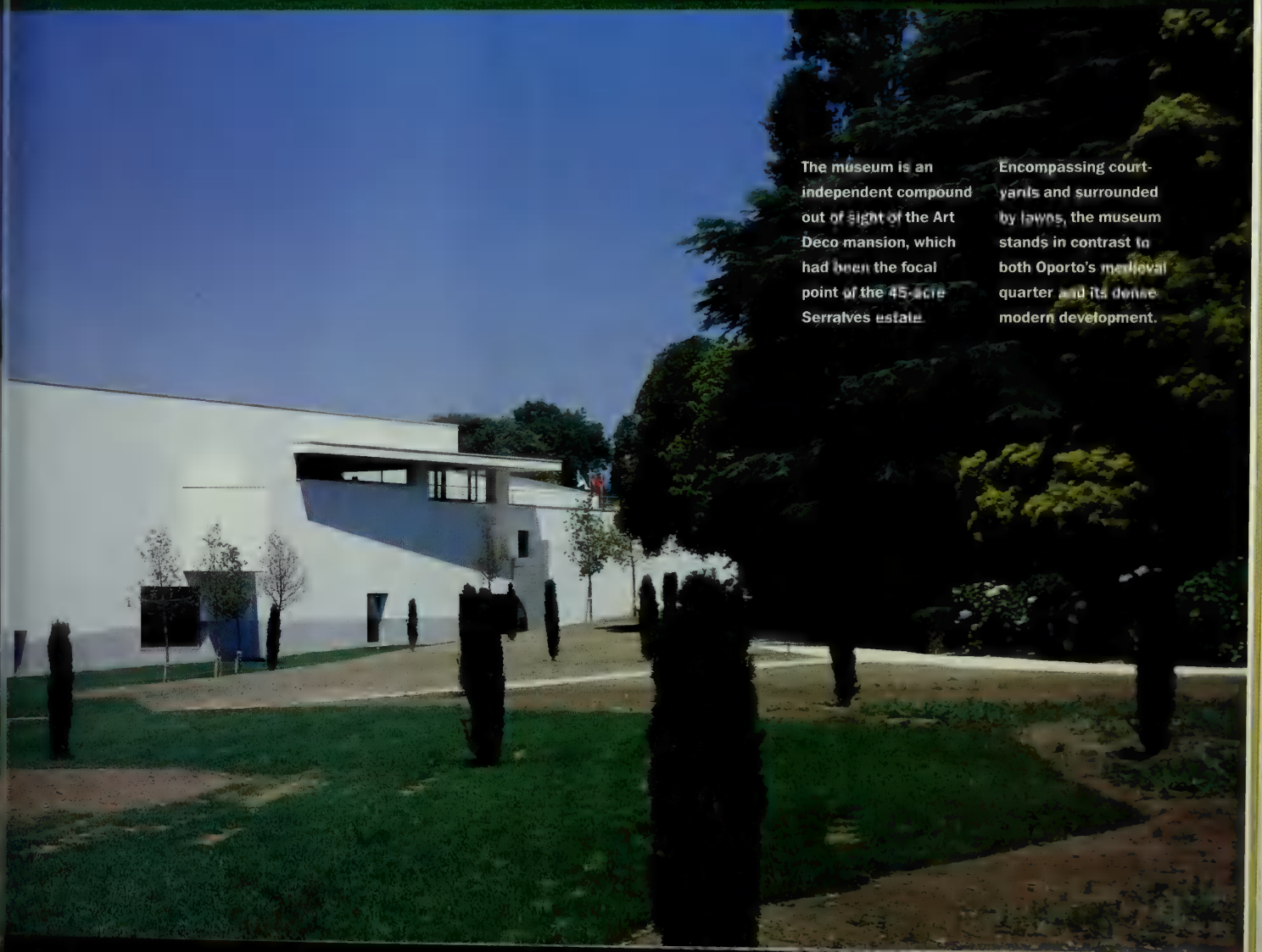
The Serralves Museum is Portugal's first center dedicated exclusively to contemporary art. It was established by the Portuguese state in 1986 and is supported by a public-private foundation that includes more than 90 of the nation's leading banks, corporations, and public companies. The museum first opened its doors in the Serralves mansion, which was built in 1940 for a local patron of the arts by French architect Charles Sicilis, with the participation of leading French decorative designers, such as René Lalique and Emile-Jacques Rulhmann.

In 1991, the Ministry of Culture asked Siza to add a new building to the grounds. The state funded its $25 million cost and provides an annual operating budget of $4 million. The project is one of the main institutional investments in Oporto's preparations to become the European cultural capital in 2001 (together with a concert hall to be built by Rem Koolhaas). It is also part of a state initiative to build cultural projects outside the country's traditional center, Lisbon.

As Portugal's most distinguished architect and winner of the Praemium Imperiale in 1998 and the Pritzker Prize in 1992, Siza was the undisputed choice for the job. The museum is his most important commission to date in his hometown, where he also designed the Oporto

David Cohn is RECORD*'s Madrid-based correspondent and writes about architecture and design for many European magazines.*

Project: *Serralves Museum of Contemporary Art, Oporto, Portugal*
Architect: *Álvaro Siza—Álvaro Siza, principal; Clemente Menéres Semide, project director; Tiago Faria, Christian Gaenshirt, Sofia Thenaisie Coelho, Edison Okumura, Abílio Mourão, Avelino Silva, João Sabugueiro, Cristina Ferreirinha, Taichi Tomuro, Daniela Antonucci, Francesca Montalto, Francisco Raina Guedes de Carvalho, project team*
Engineers: *GOP-João Maria Sobraira (structural); GET-Alfredo Costa Pereira (mechanical)*
Landscape architect: *João Gomes da Silva*
General contractor: *Edifer, S.A.*

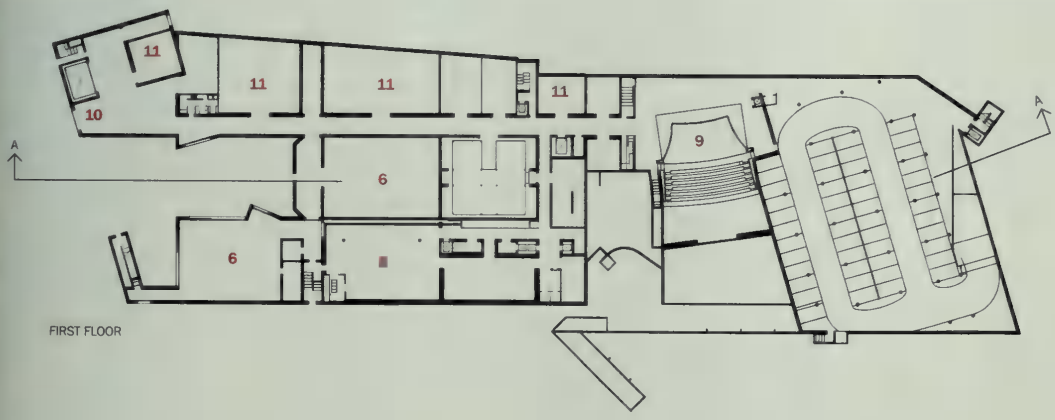


The museum is an independent compound out of sight of the Art Deco mansion, which had been the focal point of the 45-acre Serralves estate. Encompassing courtyards and surrounded by lawns, the museum stands in contrast to both Oporto's medieval quarter and its dense modern development.

The courtyard on the south end of the museum (above) contrasts with the enclosed patio near the north end of the building (right).

Visitors enter the 140,000-square-foot museum on the third floor, where ramps and stairs lead from skylit galleries to nondisplay spaces.

1. *Entrance*
2. *Patio*
3. *Lobby*
4. *Bookshop*
5. *Atrium*
6. *Exhibition gallery*
7. *Offices*
8. *Library*
9. *Auditorium*
10. *Service entrance*
11. *Storage*



1. *Courtyard*
2. *Gallery*
3. *Patio*
4. *Auditorium*
5. *Parking*

David Cohn visited Álvaro Siza earlier this year at the architect's new studio, located on a steep hill near the Douro River, not far from his Serralves Museum and the Oporto School of Architecture. The studio is in a building designed by Siza, which he shares with friends and colleagues such as Eduardo Souto de Moura and Fernando Távora. Throughout the conversation, Siza illustrated his ideas with thumbnail sketches and diagrams. Here are some of his comments:

On the visitor's experience approaching the Serralves: "There is a perpendicular axis from the street, a beautiful axis. Here, you can see the house. And there is a tennis court. And then, to the right, there is a strip of thick brush and trees, which I maintained. You go off the axis, down some steps, through the trees. Zig, zig, zig. You almost don't see the museum."

On the museum's auditorium seats: "I made them out of maple, like this. With velvet backs and leather trim, here and here. It is something I saw in the opera house in Naples. Side by side, like armchairs. It's very intimate. You feel more at home. You feel decadent."

On the problems of working with big contracting companies: "Now almost always when you go to the works you get angry. Because things are not well made. You say, 'No, this is not correct.' And there is a construction management team working for the owner, and they say, 'No, no, it's okay.' They don't care about quality at all. And they have tremendous power. It is a big danger for architecture."

On working conditions early in his career: "It was always a pleasure. I must tell you, I could go to a work site and if something wasn't right, I didn't have to say anything. The builder was ashamed to have built something badly. And he would say to the workers, 'This is wrong, take it down.'"

School of Architecture (1995) and several smaller works, such as seaside swimming pools and a teahouse in nearby Matosinhos.

Despite the harmony between architect, site, and solution, Siza had to overcome fierce opposition from local preservationists to build the museum. These individuals worried about maintaining the pristine character of the estate and took their case as far as a European Community commission in Brussels. As Siza sadly observes, "To be realistic, people today are afraid of contemporary architecture. They don't like it. And that brings up the themes of the defense of the patrimony and so on, which are used to make contemporary architecture almost impossible to build."

Over a six-year period, Siza eventually produced four designs for two sites in the park—"Smaller, bigger, smaller, bigger again," he sighs. The building was finally located at the edge of the estate in a former vegetable garden and sunk into the slope to diminish its impact on the surroundings.

Siza's museum thus forms an independent compound, out of sight of the main house and with a separate entry gate from the street. It is contained between two nearly parallel walls, punctured by window openings

THE MUSEUM GIVES THE ILLUSION OF CONTAINING MANY WORLDS.

and a moatlike bridge into the park. The walls also enclose the separate volume of a 300-seat theater, the entry court, and a patio off the main lobby. The 50,000 square feet of galleries are organized within these walls in two wings around a central court. The wings frame a visual axis that points toward the dense tree cover of the park's southern slopes, where a path descends toward unseen fields and greenhouses—a view in pointed contrast to the powerful axial machinery of the terraced gardens and fountains at the main house. "I like this indirect relation with the main house," Siza explains. "It is more a relation of memory, as you walk among the woods and paths. And it opens a wider tour through the park."

This same visual axis runs through the entire building, from the lobby court and the handsome skylit vestibule to a large central gallery, the first formal pause or "clearing" on the visitor's itinerary, where a window hung high on the wall offers an abstract view of the treetops ("like a picture," Siza suggests), and a switchback ramp descends to the gallery floor. The wings on either side of this gallery unfold in asymmetrical harmony, one ending in a beautiful knot of small galleries, the other in a magnificent span of space, where a small, almost secret passage descends to the lower floor. Each route takes visitors through spaces lit by central skylights; some are baffled by the upside-down table soffits Siza first developed for his museum in Santiago de Compostela, Spain [October 1994, page 102]. The itinerary is interrupted by large windows overlooking the grounds and small balconies, where Siza imagines himself slipping outside for a smoke.

These public spaces are only the visible superstructure of a formidable technical machine. Below deck are two levels of staff, service, and storage spaces, including a garage under the entry court, a truck dock, and a double-height library, one of the building's most beautiful spaces. On top, trusses 6.5 feet high span the largest galleries and serve as part of a structural system that combines concrete and steel. Enclosing the building are masonry cavity walls finished in stucco over a granite base.

In the end, Siza uses to advantage the severe terms under which the building was admitted to the estate. The museum is, after all, too large to be treated as a pavilion or folly. In Siza's hands, it works more like one of the walled gardens belonging to the aristocrats of Suzhou, China, in which a variety of spatial experiences are compressed into a small area, giving an inwardly focused precinct the illusion of containing many worlds. ■

The galleries (above) are alive with daylight: from skylights, reflected off upside-down table soffits, and entering through large planes of glass. Distracting details are minimized: air grilles are thin slots at floor level and electrical outlets are behind the finished gypsum board, which must be cut out for access and then replaced.

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EDUCATION K–12

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THE NEW BREED OF K–12 SCHOOLS IS DESIGNED FOR INTERDISCIPLINARY, HANDS-ON LEARNING AND INTERACTION WITH THE COMMUNITY.

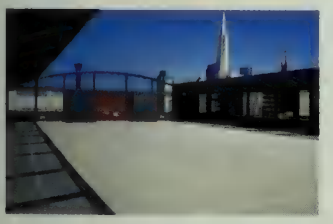
by Steven Bingler, AIA

1

Minneapolis
A new downtown school by the Cuningham Group fosters diversity and helps students take advantage of urban amenities.

2

Middletown, Conn.
In a woodsy setting, Jeter, Cook & Jepson Architects design a school addition that integrates public pathways and a nearby historic estate.



3

San Francisco
After an earthquake damages an 82-year-old structure, Kwan Henmi builds a replacement, retaining classical elements of its predecessor.

4

Far Hills, N.J.
Ford Farewell Mills and Gatsch designs a white, sun-louvered school addition that plays up an outdoor amphitheater as an additional learning setting.

Architects face a national challenge in designing educational facilities. The numbers are staggering: This year's public and private school enrollment in grades K–12 will reach a record 52.7 million students, surpassing last fall's all-time high by 500,000. New enrollment records will continue to be set for the next eight years. In 1999, nearly $19 billion will be spent on renovating and building new environments for learning.

The pressing need to renovate or replace our schools presents an opportunity for citizens, educators, and planners to incorporate the latest research on student achievement, which points to learning strategies that are more unifying and collaborative than previous methods. A movement toward integrated curricula encourages combining subjects from previously discreet disciplines like math and science into a common teaching strategy that requires architectural spaces that support interdisciplinary collaboration, teacher interaction, and student engagement.

A long evolution of educational ideas

Many of the ideas now coming into play were initiated by John Dewey, the late-19th- and early-20th-century psychologist, philosopher, and educator. Dewey's work, which centered on what he called instrumentalism or experimentalism, was built around the model of human experience. Dewey advocated project-based, hands-on, and "real world" learning. He believed in a collaborative approach to planning and implementing decisions about learning and learning environments, saying that not only do we need education in a democracy, but we also need democracy in education. This is borne out in a recent outline, called "National Design Principles for Developing Schools as Centers of Community," developed by the U.S. Department of Education. The principles—endorsed by organizations like the AIA and the Council for Educational Facilities Planners—also advocate an approach to school design that is more collaborative, integrated, and participatory.

Educators and architects are now challenging the traditional concept of the freestanding school as a mere container for learning.

Steven Bingler, AIA, who was trained as an architect at the University of Virginia, is the founder of Concordia Inc., a planning firm, and Concordia Architects. Both firms are in New Orleans. He is also special consultant to the Office of the Secretary of the U.S. Department of Education for policy related to the design of schools as the center of the community.

Instead, many new designs—both for public and private schools—encourage a stronger connection between the school site and its educational mission. One innovative approach long advocated by Dr. Anne Taylor of the University of New Mexico calls for architects and planners to embody educational content in building designs so they can serve as "three-dimensional textbooks." Among the best examples of this concept is still Thomas Jefferson's design for the University of Virginia, where 10 major pavilions were constructed to manifest classical orders and styles of architecture, while the accompanying formal gardens were landscaped to double as botanical laboratories. Other educational planning ideas extend the learning environment into the surrounding community by locating schools in shared nontraditional settings like museums, parks, or zoos. Parents and community members are also lobbying for a more collaborative use of educational facilities for recreation, performing arts, health, libraries, and other diverse community needs.

Community integration and participatory learning are making their way across the country. In North Berwick, Maine, Harriman Associates has designed a 250,000-square-foot high school that will have a health-care clinic, day-care center, a restaurant for both the community and the students, and 15 academic "houses," where classes will be taught by interdisciplinary teams. In Nashville, Everton Oglesby Askew Architects included ideas derived from a charrette with first graders—including a central structure dubbed "Eddie's Tower"—in the design for Inglewood Elementary School. Cragmont Elementary School in Berkeley was developed by ELS/Elbasani & Logan Architects in a series of workshops with parents, teachers, administrators, neighbors, and students. The result is a cluster of distinct forms that is aesthetically compatible with the surrounding homes. In Silicon Valley, architect Bill Gould, AIA, works with school districts, students, and artist Glen Rogers Perrotto to create unique installations at individual schools. Another structure in the Bay Area, Esherick Homsey Dodge & Davis' new Tenderloin school, accommodates community uses and is a symbol of safety in a troubled area.

The projects presented in this month's Building Types Study also illustrate these trends. The Wilbert Snow School was designed through a series of workshops that included parents, community members, and civic groups. The architectural solution uses a single unifying

EDUCATORS AND ARCHITECTS ARE NOW CHALLENGING THE CONCEPT OF THE SCHOOL AS A MERE CONTAINER FOR LEARNING.

The student-inspired Eddie's Tower forms the centerpiece of Inglewood Elementary School in Nashville (left). A fence at Theuerkauf Elementary School in Mountain View, Calif., was created by an architect and artist in conjunction with school students (below left). The Jean Parker School incorporates an old terra-cotta doorway and reinvents it as the new main entrance (below right).

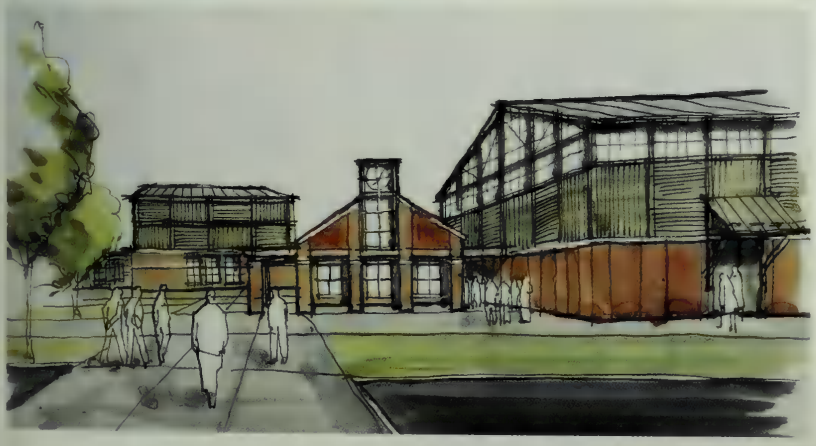
structure to integrate indoor and outdoor learning environments and to maintain unimpeded neighborhood access to the recreational amenities of the site. The design also preserves and expands a neighborhood park and adds new walking trails that link the school building to an adjacent historic estate. Educational content is integrated through the use of cast-stone medallions representing plants and animals indigenous to the area. The medallions also serve as a way-finding system throughout the school. The Jean Parker Elementary School has a separate entrance through which community members can access the multipurpose room, auditorium, music room, and community kitchen without disrupting classes.

Perhaps the most compelling and contemporary of the projects is the Interdistrict Downtown School in Minneapolis by the Cuningham Group. By locating the facility adjacent to a university education department, the school's already diverse K–12 community was expanded to include the university faculty and students. By embracing its downtown location, the school provides valuable opportunities to extend the learning environment even further, by enhancing interdisciplinary programs and field trips and developing mentoring and community-building relationships with neighboring businesses.

Cash-strapped districts cannot always afford new schools advancing the latest education theories, but they can share resources. In Dearborn, Mich., 300 students go to school in the Henry Ford Museum. The curriculum links objects in the museum with math, science, languages, and social studies. Since the building already existed, costs have been about one-third what they would have been to build a new school on a greenfield. Hayward, Calif., a community with 88 ethnic groups, plans to put a new high school downtown near a BART station and have it double as a multicultural fine arts museum and community center.

A return to ideals

The opportunity to accommodate ever-expanding integrative and participatory concepts is a boon for architects and planners. As Walter Gropius wrote in the *Bauhaus Manifesto*: "A vital architectural spirit rooted in the entire life of a people represents the interrelation of all phases of creative effort, all arts, all techniques. Architecture today has forfeited its status as a unifying art. It has become mere scholarship. The art of Architecture is dependent upon the cooperation of many individuals, whose work reflects the attitude of the entire community." These early modern principles, coupled with ideas like those of John Dewey, are changing the planning and design of schools. These new humanistic and interdependent approaches to learning environments, when created in harmony with their diverse constituents, lie at the core of a 200-year-old democratic revolution in which we are still vitally engaged. ■



Above and top left: Cragmont Elementary School in Berkeley was developed by ELS/Elbasani & Logan Architects during workshops with parents, teachers, administrators, neighbors, and students. The result is a cluster of distinct forms that is aesthetically compatible with the surrounding homes and landscape.

Left: In North Berwick, Maine, Harriman Associates designed a 250,000-square-foot high school that will have a health-care clinic, day-care center, a restaurant for both the community and the students, and classes taught by interdisciplinary teams.

1 Interdistrict Downtown School, Minneapolis

FOR A FRENETIC URBAN SITE, THE CUNINGHAM GROUP DESIGNS A SCHOOL BASED ON DIVERSITY AND COMMUNITY INTEGRATION.

by Bette Hammel

Project: *Interdistrict Downtown School, Minneapolis*
Owner: *West Metro Education Program*
Architect: *The Cuningham Group—John Cuningham, FAIA, partner-in-charge; John Pfluger, AIA, project manager; Darryl Pratte, Jeffrey Manoyck, Mohammad Lawal, AIA, Grant Reiling, project designers; Janet Dray, interiors*
Engineers: *Clark Engineering Corp. (structural and civil); Michaud Cooley Erickson (mechanical)*
Consultants: *Michaud Cooley Erickson (lighting); The Weidt Group (energy use); David Bijadi, AIA*
General contractor: *Knutson Construction*

Total construction cost: *$11.56 million*
Size: *125,000 square feet*

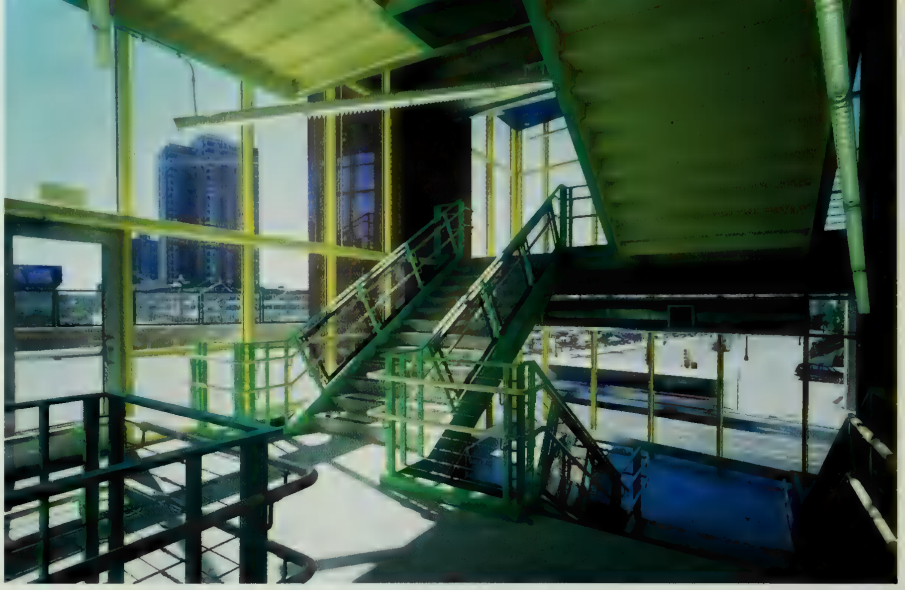
Befitting its site on a busy corner in Minneapolis' downtown theater district, a new school designed by the Cuningham Group accents intercultural diversity and hands-on learning. Working closely with forward-looking educators, the local architects have created a school that takes full advantage of its urban environment. The Minneapolis Interdistrict Downtown School, which opened September 6th and serves kindergarten through 12th grade, has flexible spaces where students of varying ages, races, and backgrounds mingle. Daylight pours in and vivid colors enliven the interiors, from which skyways will soon connect students to neighboring buildings.

The design reflects the diversity of the public magnet school's students (applications for admission have come from nine Minneapolis and suburban school districts). The north portion, built over an underground public parking ramp, is a four-story red-brick rectangular form that wraps around a glass atrium. The atrium juts out of the facade toward the street, exposing a bright yellow and purple stairway. On the south side, above a curving, soft yellow precast concrete base that

Bette Hammel is a freelance writer living in Wayzata, Minn. Her late husband was Minnesota AIA gold medalist Richard F. Hammel, FAIA.

The main stairwell is visible through a glass atrium (below); another glass atrium lies behind the main entry (opposite, bottom); the school's three primary volumes are visible along the curve of 10th Street (opposite, top).

The brightly colored staircase has open views of downtown (right); partitions of varying tints (below) divide the classroom bays, which have no doors, though many teachers close off their bays with movable storage units.



parallels 10th Street, the structure turns into a grey zinc box with operable wood-frame windows. On top of the curving base, on the second level, is an outdoor terrace enlivened by an apple green trellis.

The design of the school, which has a current enrollment of 520 children, challenged the architects with its restrictive urban setting. Flexibility, easy connections between the various areas, and a relatively small enrollment were the goals. "We have turned the corner on the big-school concept," says John Pfluger, the Cuningham Group's project manager. The 102,000-square-foot school has no gym, auditorium, cafeteria, or locker corridors. Instead, the school uses nearby city resources: a local YMCA, the MacPhail Center for the Arts, the public library, St. Thomas University (currently the only direct link by skyway), the County Government Center, and even local businesses such as a Dayton's department store. Downtowners recognize the students, who wear a uniform of khaki pants topped with polo shirts. Principal Barbara Shin says the uniforms "promote social equality and identify our students."

Cooperative spaces

In planning the interiors, Cuningham Group CEO John Cuningham says the architects "were convinced by the teachers that children learn not so much by sitting and listening but by doing things together in a cooperative way." The designers organized the school accordingly. On each floor they provided a brightly painted shedlike shop for hands-on projects and wide open resource areas or communal spaces.

Grade levels are organized into "houses" of 100 students apiece, two per floor, that bring together students from three or four grades. The second floor houses K–5, including two kindergarten rooms. The third floor has middle grades 5–8, and the fourth level holds grades 9–12. This arrangement relies on the old-fashioned premise that older pupils will help younger ones if placed in the same vicinity.

Open-ended classroom areas facing the south window wall are divided into bays, arranged by a teacher. Some rooms have traditional seating arrangements, others use semicircular configurations, while

FIRST FLOOR

THIRD FLOOR

1. *Maintenance*
2. *Kitchen*
3. *Nurse*
4. *Welcome area*
5. *Courtyard*
6. *K-5 lab*
7. *Sound lab*
8. *Media center*
9. *Gathering area*
10. *5-9 base unit*
11. *Arts area*
12. *Project area*

some have floor pillows. Colored partitions of red, blue, yellow, and green divide the bays. There are no doors, but teachers can close off their bays with movable storage units, also designed by the Cuningham Group. The curving second-floor terrace provides safe outdoor playground space.

One of the school's hallmarks is the "gathering" room, at street level. During lunch, it becomes a cafeteria, its movable tables spread with multicolored tablecloths. At other times, it's used for general assemblies, performances, or special events. Alongside this gathering space are two wood-floored rooms: one for dance and music, the other for exercise. When a huge glass garage door opens, the music room converts to a stage. Other peripheral rooms provide space for welding and physics and industrial technology, as well as for a multimedia center with books, computers, and a TV studio.

Because the building stands at a busy intersection, the architects installed electronic filtration systems to clean air coming from outside. Most of the mechanical and electrical systems are exposed and coded throughout to help students learn how buildings work. For security, visitors have only one entrance, while bused-in students are dropped off safely in a wide alley behind the building.

As youngsters enter the school they pass a poster that proclaims: "I hear and I forget, I see and I understand, I do and I remember." With its design, the Cuningham Group has implemented this philosophy. ■

Sources

Cast-in-place concrete structural system: *Knutson Construction*
Precast concrete: *Spancrete*
Cladding: *Canada Brick—Amsterdam MKII*
Curtain wall: *Rheinzing metal panels, Efco 5600 aluminum wall*
Glazing: *Viracon*
Windows: *"H" Windows of Norway*
Metal doors: *Curries*
Wood doors: *Weyerhauser*
Interior lighting: *Lithonia*
Exterior lighting: *Vega*
Paneling: *Tectum*
Carpeting: *Lees*

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2 Wilbert Snow School Middletown, Connecticut

A BACK-TO-NATURE SCHOOL ADDITION CREATES COHESION AND PRESERVES FOREST PATHWAYS FOR PUBLIC USE.

by William Weathersby Jr.

Project: *Wilbert Snow Elementary School, Middletown, Conn.*
Owner: *City of Middletown*
Architect: *Jeter, Cook & Jepson Architects—James E. LaPosta Jr., AIA, design principal; David G. Jepson, AIA, principal in charge; Peter N. Stevens, principal, community relations; Robert A. Andrade, AIA, project manager; David S. Spencer, AIA, project manager; Lisa G. Kavarnos, AIA, job captain; Barbara Hubbard, graphics and signage; Terrance Connolly, construction administration. Project team: Scott Persing, AIA, David Newman, AIA, Fernando Andrada, Mel Diegor, Grace Fabian, Melissa Merrill, Sherry Ann Oxley, Janis Newell, Steven Therault, Leo Gonzales*
Engineers: *Girard & Company Engineers (structural); Bemis Associates (mechanical, electrical, plumbing, fire protection); A-N Consulting Engineers (civil)*
Consultants: *Ferraro/Hixon Associates (landscape); Robert Celmer, PhD (acoustics); Educational Technology Infrastructure; CCR/Pyramid*
General contractor: *Haynes Construction Company*

Construction cost: *$8.1 million (building and site construction); $9.8 million (total project cost)*
Size: *71,600 square feet*

When it was built in 1954, the Wilbert Snow Elementary School in Middletown, Conn., embodied the era's progressive thinking regarding modern architecture's role in public education. The school, named for a former Connecticut governor and Middletown native and designed by Warren H. Ashley, adhered to a campus plan in a wooded, 14.5-acre setting. In an unusual layout, five free-standing classroom buildings stood in a horseshoe formation behind three main administration buildings. Each flat-roofed, brick-and-glass satellite structure contained four classrooms wrapped around a bathroom-and-utility core; students trekked to the main buildings for lunch, gym, and other activities. By integrating outdoor and indoor learning environments, the architects sought to create a back-to-nature ethos. In practice, however, young students sometimes had to battle the elements during inclement weather.

A recent renovation by Hartford-based Jeter, Cook & Jepson Architects maintained the campus character while integrating the separate buildings into a more efficient, unified whole. "The new building plan and detailing are a direct response to the wooded site," says James LaPosta Jr., AIA, principal design architect. "The

William Weathersby Jr. is a freelance writer living in Westport, Conn.

The new lobby corridor is the north-south circulation spine of the school (below); an elevated bridge connects the main building to an existing brick classroom structure that the architects converted to a dining hall (opposite top); a new portico fronting the refurbished gym provides arrival and transition spaces leading to the two classroom-wing additions (opposite bottom).

1. *Dining hall*
2. *Auditorium*
3. *Music area*
4. *Kindergarten*
5. *Lobby*
6. *Administration*
7. *Classroom*
8. *Inner courtyard*

A music classroom (below), computer workshop (opposite, top left), and library/media center with built-in storage and seating (opposite, top right) are new amenities. A curved corridor connecting the school's old and new sections offers abundant views and daylight (opposite bottom).

community has historically used the school grounds as a neighborhood park, so we modeled our forms after a nature center or park recreation building."

A variety of voices

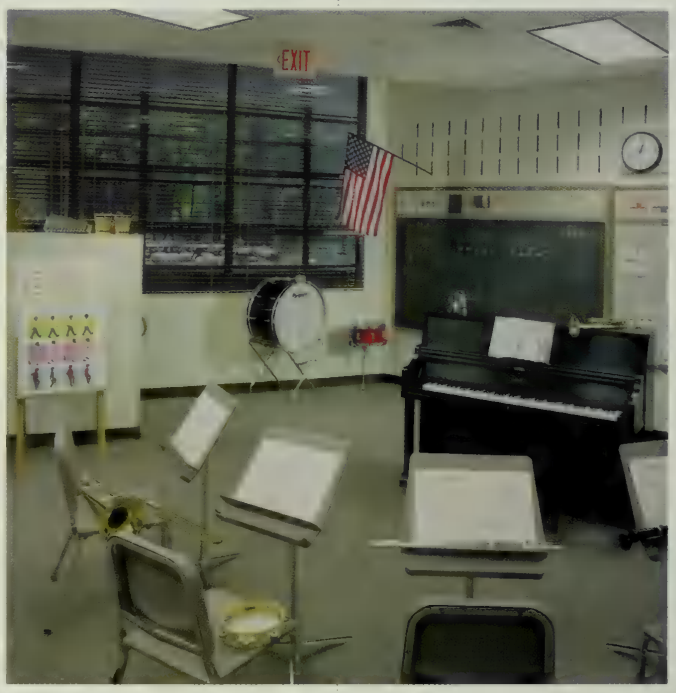
Before construction, the architects held a series of design workshops for parents and members of the community. Presentations before a variety of civic groups further refined the design. Site plans were also coordinated with the adjacent historic property, being developed simultaneously as a public park. LaPosta says he welcomes the advocacy that arises with school projects. "The teachers and administrators were instrumental in developing and then modifying the programming of the spaces," he says. "As clients, experienced educators hone in on the function of each space, as well as its relationship to the whole."

On this project, preschool teachers pushed for integrating their young students with the older classes to eradicate feelings of separation; the architects adapted the former preschool building into a dining hall and relocated the prekindergarten class to a new wing. Likewise, storage outside the classroom was on every teacher's wish list, so a large walk-in closet accommodating instructional materials stands at the end of every classroom corridor. And kitchenettes near the classrooms ease the preparation of snacks and craft ingredients for the youngest students.

The school's three anchor buildings, which form an east-west axis, were retained and renovated while the outdated satellite classroom pods were razed. A pair of parallel two-story classroom wings now lie perpendicular to the west side of the main administration building, establishing a link to the vaulted gymnasium. On the east side of the administration building, a glass-enclosed bridge passes to the new dining hall. The bridge helps preserve a popular public walking trail that passes beneath.

A playground in front of the building was relocated to the rear to make way for additional parking and to heighten security. A range of learning environments was also created from both natural features and remnants of the razed building footprints. A hillside was tailored as a natural amphitheater, fieldstone walls were rebuilt along an enhanced path leading to an adjacent environmental center, and an old concrete stairway now rises to a plateau of grass.

A new double-height lobby functions as a central axis and circulation hub between wings. Interior walls here and throughout the classroom corridors are stained concrete block scored in an 8-by-8-inch square pattern. Cast-stone medallions at children's-eye level



feature reliefs of local plants and animals that aid way-finding. The lobby also creates a new focal point along the school's facade, via the roof's exposed wooden support members and overhangs. "We wanted to express the school's structural components in a straightforward manner," LaPosta says. "In a way, the school is a three-dimensional textbook on architecture and construction for kids."

The building's levels hew to the existing hilly topography and preserve mature plantings, including the town's oldest oak tree. Since the building was also required to support community activity, its new configuration allows the dining hall, gym, auditorium, and classroom wings to be isolated and opened independently, with separate entries and parking. The classroom wings are self-contained, so that children never need to go around a corner without adult supervision. The single-loaded corridors provide varied views of the grounds, with some classrooms featuring doors that open directly onto

a landscaped courtyard enclosed between the wings.

The $9.8 million renovation budget combined state and local funding and monies raised through a bond referendum. Measures to keep the project under budget included prefabricated truss roofing over the classroom blocks and the use of shed forms, which reduce framing and roofing costs. Other details lower energy costs for long-term operation. And the campus format enabled the architects to easily zone construction over a year and a half while school days continued uninterrupted. ■

Sources

Curtain wall, aluminum windows, and entrance doors: *Kawneer*
Built-up roofing: *GAF*
Elastomeric roofing: *Sarnafil*
Tile/shingles: *Celotex*
Wood doors: *Graham*
Locksets and hinges: *Sargent*
Acoustical ceilings, suspension grid, resilient flooring: *Armstrong*
Cabinetwork and custom woodwork: *Chandler Lewis*
Interior lighting: *Hubbell, Louis Poulsen*
Plumbing: *Bobrick*
Signage: *ASI Sign Systems*
Office and reception furniture: *HON*

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3 Jean Parker School San Francisco

CLASSICAL ELEMENTS FROM AN EARTHQUAKE-DAMAGED SCHOOL LEND HISTORICAL DETAIL TO A MODERN REPLACEMENT.

by Soren Larson

Project: *Jean Parker Elementary School, San Francisco*
Owner: *San Francisco Unified School District*
Architect: *Kwan Henmi Architecture and Planning—Sylvia P. Kwan, FAIA, principal-in-charge; Kiyoshi Matsuo, AIA, project manager and architect of record. Reid & Tarics Associates: Nancy Severns, project architect; John Lum, project designer*
Interior designer: *John Lum*
Engineers: *Sandis & Associates (civil); Lok Kwan & Associates (structural); Grant Wong/Gayner Engineers (mechanical and electrical)*
Consultants: *Melvin Lee Associates (landscape); Robert Hodgson (construction costs); Smith Emery Company Testing Laboratory*
General contractor: *S.J. Amoroso*
Electrical contractor: *Edward W. Scott Electric Co.*
Plumbing: *O'Brien Mechanical*

Total construction cost: *$8.8 million*
Size: *37,200 square feet, plus a 6,500-square-foot garage*

When the Loma Prieta earthquake hit San Francisco in 1989, the students of the Jean Parker School in Chinatown found themselves with no place to attend class. Their unreinforced masonry building—built in 1907 to replace a structure on the same site that was destroyed in the traumatic 1906 earthquake—had been damaged beyond repair.

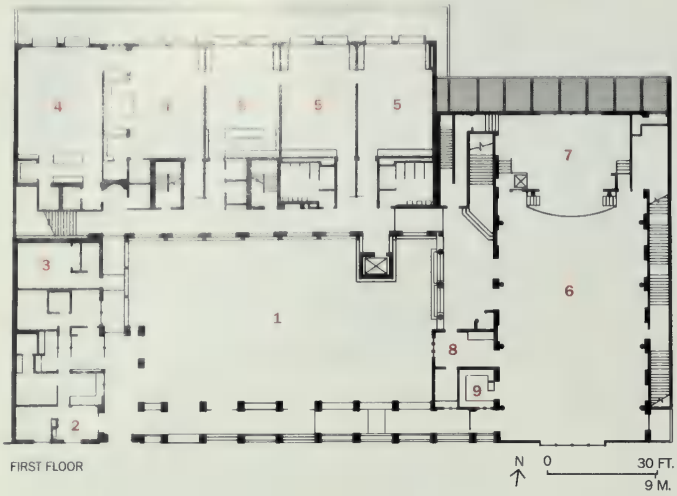
Temporarily, the 500-plus students were bused to makeshift classrooms in an old building in the Marina district, and the San Francisco Unified School District turned its attention to constructing a new building—one that would live through the next earth tremors. But Claudia Jeung, who retired this year after serving as principal of Jean Parker for 14 years, had a wish list that went beyond seismic support. "One of our stipulations was that we wanted some of the old to be incorporated into the new," she says. "The old building had such character, and we thought it would be a shame not to include some of those elements."

A touch of the classical

Jeung expressed her desires to the replacement school's designers, Reid & Tarics (a firm that has since dissolved) and Kwan Henmi, and a strategy was outlined to salvage certain details of the old structure as it was scrapped. The firm then included the saved pieces as counterpoints to the contemporary aesthetic of the remainder of their design. "We're lucky [the school district] had the foresight and sensitivity to allow this," says Sylvia Kwan, FAIA, the firm's partner-in-charge, noting that the procedure was somewhat painstaking. But now classical columns stand in the new school's courtyard and multipurpose room, and a terracotta Winged Victory is the centerpiece of the new library. Marble wainscoting from the old staircase adds dignity to the walls of the administrative offices. In the most dramatic gesture, the original arched, terracotta portal was restored and bolted to the new masonry, providing a frame for the new main entrance.

Careful salvaging constituted the first strenuous undertaking before any new construction took place. Making the site earthquake-ready was another. "This was a two-year project, but the entire first

The school is centered around a courtyard on Chinatown's busy Broadway (opposite); a rooftop playspace offers superb views of the Transamerica building and downtown (right); the classroom section is fronted by walkways that overlook the courtyard (below).



1. *Play court*
2. *Administration*
3. *Storage*
4. *Kindergarten*
5. *First grade classroom*
6. *Multipurpose room*
7. *Stage/music room*
8. *Facility kitchen*
9. *Community kitchen*

year was spent fixing the site," says Kiyoshi Matsuo, AIA, the project's architect of record. "Half the cost of the building is under the first floor." The construction team drilled piers into the bedrock, 20 to 30 feet down, and then attached the piers to a steel frame. The school went up from there.

While the previous buildings occupied the center of the small, 0.6-acre site, Kwan Henmi tried a new tactic. The firm placed the classrooms along the north edge, the administration offices and visitors' center in the west, and a multipurpose room on the east, with the three portions surrounding a courtyard/playground that faces busy Broadway. A see-through metal fence topped with wooden slats fronts the playground, opening up views to the street and nearby buildings while maintaining a secure border. "The scale is the same as the surrounding neighborhood," notes Matsuo.

Because of the school's densely populated, noisy location, classroom have no windows on their south side, which faces the street. Instead, large, green-trimmed, modern versions of the area's traditional bay windows—which appear throughout the new structure—are placed on the north side of the classrooms, admitting ample light and a minimum of street sounds. The heating units are disguised neatly as wood window nooks where students can congregate in small groups. Additional playground spaces are provided by a rooftop play terrace above the third-floor classes.

Open arcades along the southern edge of the northern section lead to other classrooms, stairways, bathrooms, and the library, which has a double-height ceiling and a large bay window—using double-glazed, noise-repelling glass, like the others—that makes a relatively small room seem spacious.

The hub of activity is the 5,000-square-foot multipurpose room, which contains a raised stage at one end and a bay window at the other. Small windows along the top of the west wall allow in more light, while special tables can fold up into the walls. The room can be used as a meeting hall or performance space for the student body or neighborhood groups, who use it for meetings and night school. At night, sliding wood panels cover the front window to block out street light.

The architects added a community kitchen off the multipurpose room and a separate entrance for the public to use. Jean Parker is "the last school with a separate kitchen for the community that will be built in San Francisco," says Kwan. "Community outreach is such an important part of [inner-city] schools, and this one has a history of interacting with the community."

To comply with the district's budget limitations, the architects

Salvaged classical columns ring the courtyard (opposite); the stage in the multipurpose room has a classroom behind it (right); large bay windows admit an abundance of light into the library (below).

placed a classroom at the north end of the room behind the stage and equipped it with a movable partition that can divide the space. In this way, the multipurpose room could be called a classroom and financed under the district's restrictions.

To hear it from the school's occupants, the architects achieved the overall goal: a quiet, light-filled school that fits its urban context without being overwhelmed. "It's great to come in off the street," says Janet Dong, the school's principal. "There is such a feeling of serenity here." ■

Sources

HVAC: *Bay City Mechanical*
Fireproofing: *Monokole, Grace Corp.*
Brick veneer: *Glen-Grey*
Roofdeck: *Mer-kote Products*
Built-up roofing: *Manville, 4 arc*
Shingles: *ASC Pacific*
Aluminum: *Herzog Aluminum*
Acoustical ceilings: *USG, Auratone*
Paints and stains: *Dunn/Edwards*
Wall coverings: *Koroseal*
Wood floors: *Hillyard Rally Gym*
Resilient flooring: *Azrock*
Sprinklers: *Bay Area Fire Protection*
Elevators: *Otis Elevator Company*
Plastic laminate: *Nevamar*

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4 Far Hills Country Day Far Hills, New Jersey

IN UPSCALE SUBURBIA, A SPARTAN SCHOOL FROM THE 1940S EXPANDS INTO A SLEEK, SUN-LOUVERED ADDITION.

by Julie Moline

Project: *Far Hills Country Day School (Upper School addition), Far Hills, N.J.*
Owner: *Far Hills Country Day School*
Architect: *Ford Farewell Mills and Gatsch, Architects—Michael Farewell, FAIA, designer and partner in charge; Michael R. Schnoering, AIA, project manager; Chris Boyer, project architect; Andrew Guzik, Robert Forwood, Catherine Sellers (architectural team)*
Engineers: *Ford Farewell Mills and Gatsch (Ira Guterman, director of MEP Engineering; Richard Olszewski, electrical engineer); Harrison-Hamnett, PC (structural); AMM Technical (plumbing and fire protection)*
Consultant: *Anthony T. Baionno*
General contractor: *E. Allen Reeves*

Total development costs: *$2.9 million (including renovation)*
Size: *12,000 square feet (addition)*

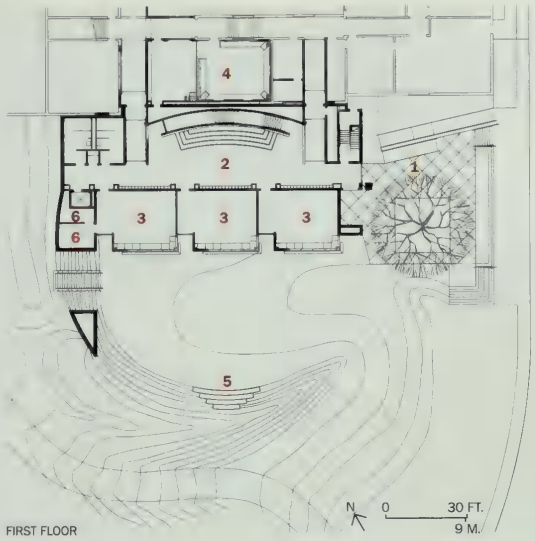
Far Hills Country Day School—despite its tony location in the horse country of Somerset County, New Jersey—doesn't have the quaintness of a traditional brick-and-ivy private school. The architects who built it in the 1940s used cinder block and little apparent imagination. "It was spartan," says a diplomatic Michael Farewell, FAIA, of Ford Farewell Mills and Gatsch, the Princeton-based firm hired to design an addition and make site improvements. While taking cues from the older structure—more cinder block and the same low-sloped roof as its predecessor—the new building has bright white exteriors and louvers on both stories that make it look like a hip oceanside apartment building, bordered by playing fields instead of the sea.

The three-phase project began in 1994 and addressed the school's needs for more classroom space, a safer and more efficient traffic flow, and code improvements. Phase one, completed in 1996, included a new arcaded entrance, an improved parking and traffic pattern, and landscaping and utilities work. Phase two, completed in January 1998, involved the construction of a 13,000-square-foot addition to the Upper School (grades 6–8). Phase three, finished in September 1998, included renovations to the original

Julie Moline is a freelance writer living in New York City.

The landscaped embankment along the west facade—extending the arc of the indoor commons—provides a four-row amphitheater for outdoor learning (opposite, top left); a new entrance court surrounds a mature oak tree (opposite, bottom left); louvers cover both of the east facade's floors (below).

1. *Entrance court*
2. *Commons*
3. *Classroom*
4. *Computer center*
5. *Amphitheater*
6. *Mechanical room*



13,000-square-foot Lower School (grades K–5).

The new wing was configured to give the Upper School a clear identity while linking it to the two levels of the existing building. There are six new classrooms, a computer instruction and resource lab, and a striking, double-height indoor commons, with a stepped, maple platform facing the ground-floor classrooms and the balconies ringing the classrooms upstairs. The commons, lit by an angled roof opening akin to a newfangled clerestory window, gives access to the classrooms on both levels. "The idea was to provide a dynamic series of spaces that proclaim the excitement of the kids' mission and incorporate the whole drama of a school day," Farewell says, describing the drama as "the rush to class, the new information they're absorbing, the whole interaction of dozens of kids who know each other well." The idea of the new building, he continues, is "to make something grounded and solid. The lowly, humble cinder block is a thick, solid container for the porous and open architecture within, full of air and space."

A stylish spareness

The classrooms were designed to handle relatively small groups—15 students is the maximum—in keeping with the school's high faculty-student ratio. Separate learning areas are marked by different ceiling heights. Rooms with lower ceilings house computers, television monitors, books, and small-group discussion areas. The more traditional classrooms have higher ceilings and enough square footage to handle many seating configurations. "The rooms are designed to foster close relationships among teachers, mentors, and students. Intimacy and a certain spareness are key," explains Farewell. Light coming through the windows can be controlled by working the louvers.

The landscaping is similarly minimalist and functional: a new entrance court surrounds a mature oak tree, and a semicircular embankment along the west facade—extending the arc of the indoor commons—provides a four-row amphitheater for outdoor learning. It also offers a place to read, do homework, or eat lunch with friends.

"A lot of the school's programs in the arts and sciences are taught outside," Farewell says. "The idea was to blend pedagogy and architecture in a way that's unconventional for a day school. We deliberately reduced things. We wanted it distilled to a few essentials. In that environment, a framed opening, an L-shaped portal, or a niche for a private discussion becomes very important. The kids notice [the details], think about them, connect intuitively to the tone we've tried to establish."

Both parents and children have responded enthusiastically to that tone, Farewell claims. "The parents

The classrooms were designed to handle about 15 students (left); a clerestory window lights the double-height indoor commons (below).

were excited by the commission: they know they've done something unusual." As for the kids, "there's a sense that they're always moving on a stage, that there's an important relationship between the purpose of the building and the purpose of the student body."

"Students need to have ideas and images of modern art and architecture around them," says Farewell. "Schools aren't just nostalgic, familiar environments; they should also connect with the real world." ■

Sources

Exterior masonry: *Clayton Block*
Stucco: *California Stucco*
Curtain wall and entrances: *Efco*
Elastomeric roofing: *Carlisle*
Metal entry canopy: *Berridge*
Glazing: *Tempglass and Lurie*
Wood doors: *Eggers*
Locksets: *Schlage*
Acoustical ceilings and resilient flooring: *Armstrong*
Suspension grid: *Chicago Metallic*
Woodwork: *North Whales*
Carpet: *Karastan Bigelow*
Interior downlights: *Lightolier*
Roof trusses: *Trus Joist MacMillan*
Metal louvers: *ASCA*
Lockers: *Classic Wood Lockers*
Plumbing: *American Standard*

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CIRCLE 39 ON INQUIRY CARD

"Can this be legal?" he queried.

Interior Design Firm - *Alan J.E. Deal & Associates, Inc.*
Location - *Wulfmeier & Ottenwess / shown above - partner's executive office*

Products - *Sherwin-Williams ProMar®*
Project Paint Colors - *Sherwin-Williams ColorAnswers®: Hematite SW1014 | Ermine SW1023 | Landmark Gray SW1036 | Leatherleaf SW1167 | Artful Auburn SW1308 | Luminary Gold SW1362 | Gem Turquoise SW1474 | Melbourne Coast SW1475 | Truly Teal SW1476 | Crowning Glory SW1532 | Grapevine SW1546 | Cabaret Purple SW1553 | Renoir Red SW1609*

An appeal to design.

It was a most successful case: Alan J.E. Deal & Associates deftly negotiated a merger of individual tastes when the design firm recently created a new suite of offices for Detroit's Wulfmeier & Ottenwess law practice. Though prudence mandated that the unique styles of the firm's two partners be duly represented in the 5,000 square foot repurposed space, in reality, their design perspectives were dramatically diverse.

To visually unite one partner's preference for conservative traditional finishes and furnishings with the other's wish for fresh and contemporary, Deal specified Sherwin-Williams paints in deep, woodsy tones of *Cabaret Purple*, *Leatherleaf* and *Hematite*, interspersing the rich shades with clean but complementing neutrals like *Ermine* and *Landmark Gray*. Through this judicious use of color and design principles, consolidation was completed. And the verdict? A unanimous win.

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CIRCLE 40 ON INQUIRY CARD

Understanding New Paint Products and Formulations

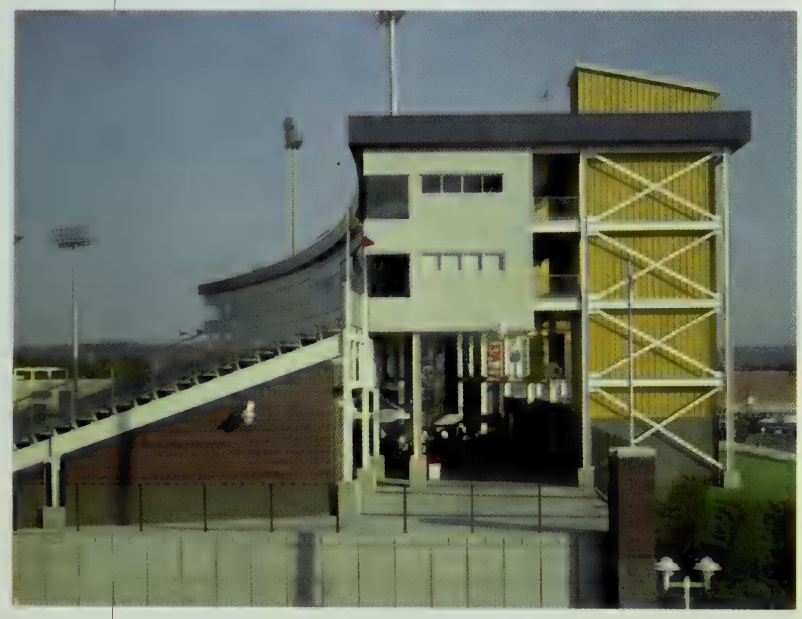
PRODUCTS ARE CHANGING—PARTLY IN RESPONSE TO INCREASING REGULATIONS, BUT ALSO TO PROVIDE MORE SPECIFIC FORMULAS FOR SPECIAL NEEDS.

by Charles Wardell

Chattanooga's 20,000-seat Finley Stadium, which hosts soccer and football games for the University of Tennessee, is emblazoned with the school's colors, brilliant gold and a rich, vivid blue. Achieving these vibrant colors and getting them to last, especially on the south-facing exterior walls of the stadium, required some careful research into various types of paints and coatings by the architects, Chattanooga-based Derthick, Henley, and Wilkerson. Blue paint, like that of other primary colors, is particularly vulnerable to ultraviolet-induced fading, says Bill Wilkerson, AIA. "With field-applied paints certain primary shades change rapidly under direct sunlight. You may select one color, and five years later it's another," he says.

After doing some research, the architects decided to order the metal exterior panels with a factory-applied fluoropolymer coating, an oven-baked finish that offers superior color uniformity, gloss, hardness, and adhesion. "Factory-applied coatings are always the ideal choice," Wilkerson adds. But they are costly. As a result, most architects specify standard, field-applied oil, latex, or finishes.

For instance, the rest of the steel on the outside of Finley Stadium was finished by the fabricator, who used a high-quality epoxy primer and then topped it with one layer of solvent-based urethane paint. A second coat was applied on-site. The metal components used inside the building arrived from the fabricator with a single coat of epoxy primer. A top coat of urethane paint was applied on-site.



To keep the vivid, exterior colors at Finley Stadium in Chattanooga looking good, architect Bill Wilkerson, AIA, specified two coats of urethane paint, which holds up under exposure to ultraviolet light.

Charles Wardell is a freelance writer based in Vineyard Haven, Mass., who specializes in technology-related subjects.

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 204 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Explain how federal and local legislation impact the amount of volatile organic compounds contained in paint.*
2. *Describe the role of each of the ingredients in paint.*
3. *Explain the differences between oil- and water-based paints.*
4. *Summarize the changes in paint formulas that have taken place within the past 30 years.*
5. *Explain some ways to minimize the environmental impact of paint.*

As the formulations of paints and coatings become increasingly complex, architects are faced with more choices, more specific formulations, and new methods of application. "Manufacturers are more specific about how and where a particular coating should be used," Wilkerson says. "Architects are exploring the use of fairly vibrant colors in outdoor exposures. And we're beginning to see what does and doesn't work." Designers must understand which type of paint is suited to the job, how the application of the coating can be controlled, and how to make sure the prep work is done correctly. They must also understand the regulatory environment and how it affects paint components.

VOC woes

On September 13, federal legislation took effect that forces paint and coatings manufacturers to lower emissions of volatile organic compounds, or VOCs. The term "volatile" refers to the liquids in coatings that readily evaporate at room temperature, and "organic" refers to a class of compounds that contain hydrogen and carbon, better known as hydrocarbons. These compounds are carried in the solvents that most

During the renovation of the 112-year-old Wyatt-Edison Charter School in Denver, Root Rosenman Architects recognized that a scrubbable, low-VOC paint would be the best choice. Budget pressures, however, limited the choice of paint—low-odor paints cost about 15 percent more. A high-quality acrylic latex was specified for the grand entry (above) and the hallways (right).

coatings contain, including mineral spirits, naptha, xylol, toluene, and ketones. Particularly high percentages of VOCs, measured in grams per liter, are contained in alkyd, urethane, and some types of epoxy coatings, as well as in lacquers, varnishes, and stains. Most latex paints have a small amount of VOCs, depending on the product.

The new law is only the latest in a series of regulations that started with the Clean Air Act of 1972. This legislation set acceptable levels of ozone and required states to formulate plans to deal with the problem. When VOCs are released into the air during the application of a coating and subsequent drying, they react with nitrous oxides and sunlight to form ground-level ozone, which can impair breathing, irritate the nose and throat, and depress the body's immune system. Architectural coatings are not a significant source of ozone—automotive exhaust is much worse—but it is, nonetheless, a contributor.

Some states and localities are exceeding the new federal guidelines with even more stringent requirements. David Zelch, manager of architect and engineering services for PPG Architectural Coatings, says the different VOC restrictions, which vary from state to state or county to county, are confusing and sometimes vague. "If you're painting a bridge in New Jersey, you have one set of VOC regulations. If you're painting a garage floor in Pennsylvania, you have another."

California's South Coast Air Quality Management District (SCAQMD), for example, approved new VOC limits for architectural coatings in May 1999 that are even lower than the federal ones. These limits take effect in stages between now and July 2006. Floor coatings, for instance, will have their emission limit cut from 400 to 50 grams per liter of VOCs; interior and exterior stains are reduced from 350 to 240 grams per liter; and interior and exterior primers from 350 to 100 grams per liter. The National Paints and Coatings Association, an industry group that represents coatings manufacturers, suppliers, and distributors, is challenging the new SCAQMD limits in court, but the clear national trend is toward more stringent restrictions.

Some low-VOC, oil-based or alkyd products are still permitted. And high-VOC products, such as the factory-applied fluoropolymer Wilkerson used for the stadium project, are still allowed because many of the VOCs are burned off during the closely controlled application process. Still, manufacturers are, for the most part, focusing their research and development on water-based or latex coatings and moving their product lines away from alkyd formulations.

What's a specifier to do?

"The average architect looks at paint as nothing more than color," says Paul Simonsen, AIA, a spec writer and architect in Phoenix. "Some don't know an alkyd from a latex. Nor do they know where to use each." That's

not an indictment; Simonsen finds that most architects already have too much to think about without pouring paint chemistry into the mix. One solution is to lean heavily on manufacturers' technical reps. "I rely on them more than ever," Wilkerson says. "While we as architects don't need a chemical-engineering degree to understand the products, we do need a broad understanding of the limitations of the different coatings." The manufacturers' ultimate goal may be to sell their products, but they are still honest about the limitations of certain products. Specifiers must still understand enough about the subject, chemistry notwithstanding, to pick their paints properly.

In the past, architects tended to work with a single coatings manufacturer for all their needs. But as paint products have become more specific, with certain formulations more suitable for some applications than others, designers have been forced to diversify. "I've seen paints and coatings grow from a small section in the specification documents to a 12-page minimum," says Robert Caldwell, an interior designer with the Washington, D.C., office of Gensler and Associates. This past April, in response to increasing product changes by manufacturers, Gensler updated its standard paint spec form. The biggest change was the inclusion of a matrix format that lists several approved manufacturers for each category of finish. The matrix lists substrates down the left-hand column and manufacturers across the top. Following this chart helps the company's architects narrow the list of manufacturers and choose the right type of paint.

"PAINTS AND COATINGS HAVE GROWN FROM A SMALL SECTION IN SPECIFICATION DOCUMENTS TO A 12-PAGE MINIMUM."

A coating for every need

The new, low-VOC latex formulas are often superior to their oil-based predecessors, says Lane Blackburn, vice president of architectural marketing at Sherwin-Williams. His company, like many others, is developing more niche products for specific surfaces and environments, such as acrylic coatings that can be put on concrete a week after it has been poured. Other examples include formulations that offer:

- improved adhesion for surfaces subject to chronic peeling;
- UV blockers and stabilizers that help prevent fading and paint degradation;
- elastomerics for surfaces where a coating that can bend or stretch with temperature changes is more important than hardness;
- block resistance, which prevents adjacent painted surfaces from sticking to one another, as on window frames;
- increased hardness for use on abused surfaces like door frames; and
- temperature-sensitive paints that can go on when surface temperatures are extreme.

"All of these specific formulations require trade-offs," Blackburn cautions. "If you maximize a coating for one of these situations, it might not perform as well under other conditions." A single project may require a dozen or more different types of paint.

Picking paint

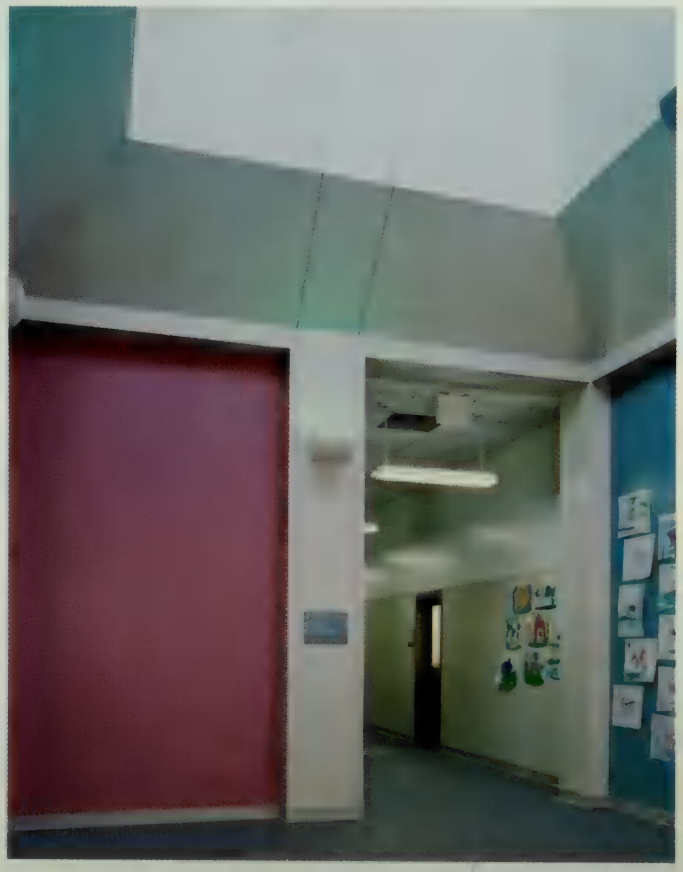
While a paint's exact makeup is proprietary, most are a mix of finely ground solids—including binders, pigments, and additives such as drying oils and mildewcides—dissolved or suspended in a liquid carrier. The pigment in a paint adds color and determines how well a paint covers, or hides, the underlying surface. The binder forms a film that knits the particles of pigment together and, given a good prep job, clings to the underlying surface. The carrier evaporates as the paint dries, leaving the solids behind as a thin (.002 to .003 inches) surface film.

Paints have a solids content ranging from 25 to 45 percent. Better paints generally have a higher solids content, providing superior coverage and a thicker paint film. The solids content may be listed on the technical data sheet; if not, calculate it by dividing the paint's dry-film thickness by its wet-film thickness (both of which are available on the data sheet).

There are two kinds of pigments: organic and inorganic. The latter are mined and are often metallic oxides, such as titanium dioxide. Almost all paints use powdered titanium dioxide for their primary pigment because of its superior hiding power. The more of this powder a paint contains, the better its coverage ability.

Organic or petroleum-based pigments make brighter, clearer colors. Paints made with organics are more expensive to produce than those made with inorganics, partly because the pigments are more volatile. Paints with organic pigment don't cover as well, particularly in the red-yellow-orange range, and are less durable. Inorganics are best for earth tones and muted colors. They also give the paint body, helping it adhere to the walls and the paintbrush and hiding the former color better than a paint made with organics.

According to John Stauffer, director of the Paint Quality Institute in Philadelphia, paint companies use more extenders to increase



PROJECT SPECIFIC PAINT GUIDELINES

TYPE OF ROOM OR PROJECT	SUITABLE PAINT TYPES	CHARACTERISTICS
1. Health-care facilities, restaurants, schools	1. Low-odor, low-VOC interior satin or semigloss acrylic latex	1. Absence of paint fumes, dries quickly for minimal downtime; ease of cleaning and durability
2. Office buildings, hotels, retail	2. Interior flat, satin, or semigloss acrylic latex; alkyd; or semitransparent stain	2. Dries quickly for minimal down time
3. Walls in high-traffic areas, such as hallways, stairs, workshops, and kitchens	3. High-gloss latex or alkyd enamel, water-based acrylic epoxy, urethane enamels	3. Durable and easy to clean, stands up to scrubbing
4. Garage floors and areas where vehicles are parked	4. Solvent-based acrylic coatings specially formulated for floors, moisture-cured urethane coatings, water-based acrylic epoxy, and acrylic urethane coatings	4. Durable, stands up to traffic and resists stains from petroleum products; some of these coatings pose environmental hazards if improperly disposed of; some dry slowly
5. Exterior walls, siding, and trim	6. Acrylic latex or alkyd, urethane enamels	5. To enhance performance, specify formulas with UV blockers

OIL- AND WATER-BASED LATEX PAINTS: RELATIVE BENEFITS

OIL-BASED	LATEX	
1. One-coat coverage	1. Cleans up with water	5. Color retention
2. Adhesion to difficult surfaces	2. Low odor	6. Chalk resistance
3. Good leveling characteristics	3. Nonflammable	7. Gloss retention
4. Hardness of film means resistance to abrasion and tackiness	4. Nonyellowing (interior formulas)	8. Long-term flexibility

COMPOSITION OF A TYPICAL ACRYLIC LATEX SEMIGLOSS PAINT: BY WEIGHT

Titanium dioxide and other pigments: 25 percent	Water: 40 percent	15 percent
Acrylic polymer binder: 20 percent	Additives, including soaps, defoamers, coalescents, thickening agents, and preservatives:	Total solids by weight: 50 percent
		Total solids by volume: 35 percent

the percentage of solids. These materials can provide bulk and help keep costs down, and, when used correctly, they can also enhance certain qualities. For instance, calcium carbonate enhances chalk resistance, while silicas and silicates make the paint stand up better to scrubbing.

Oil and water

For years, architects, professional painters, and others involved in the building trades spurned latex in favor of oil-based products. The best interior or exterior paint jobs, they knew, were oil, due to its superior leveling, which eliminated brushmarks and allowed the paint to flow into voids; its slower drying times, which gave the painter time to even out the finish; its wide range of application temperatures; its ability to hide knotholes, colors, or stains on the wall beneath; the hardness of the finish; and its ability to penetrate deeply into wood fiber and adhere to a range of surfaces.

While most fans of oil paint have switched to latex, there are holdouts, including John Franzen, AIA, of Southport, Conn. He uses latex on walls and ceilings, but specs oil for trims and built-ins. "It's partly because I'm old fashioned," he says. "But most painters tell me oil-based paint sands better and leaves a smoother finish. Latex is softer, so the sandpaper gums up." Latex paint manufacturers insist that they've licked the hardness problem. New water-based enamels, such as Sherwin-Williams ProClassic, dry immediately and, according to the company, are actually harder than oil enamels.

The base of a paint, whether oil or water, is the medium in which the other ingredients are suspended or dissolved. Oil-based paints use petroleum-derived hydrocarbon or natural oil solvents (such as linseed oil); water-based paints use, of course, water. But an equally important distinction between oil- and water-based paints is the type of binders they use. In the 1940s, manufacturers began using synthetic resin binders called alkyds. Paints that contained alkyds spread easily, dried

MOST FANS OF OIL-BASED PAINT HAVE SWITCHED TO LATEX BY NOW.

fast, and were durable and resistant to mold and mildew. Latex, a type of vinyl binder, hit the market about the same time as alkyds. Early formulations were clumpy, thick, and unappealingly shiny. They took a long time to dry and failed to bond with the substrate.

In the process of reformulating their coatings as water-based products, manufacturers have had to look at everything that goes into their paints. As part of the switch, they've put a lot of effort into improv-

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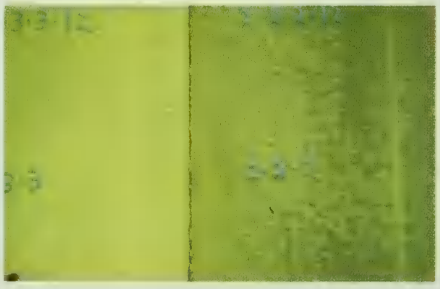
CIRCLE 41 ON INQUIRY CARD

ing the quality of the film that is formed by the acrylic binders used in water-based paints. An alkyd paint forms an impermeable film through constant surface oxidation, a process that can go on for the life of the paint. This process causes alkyd films to lose their color over time, while making them ever more brittle and likely to crack and flake. Acrylic paints, on the other hand, don't undergo chemical reactions as they dry; the acrylic particles simply draw together as the water evaporates, forming a stable yet flexible film that can expand and contract with the underlying wood. At the molecular level, this film resembles a fine mesh that's loose enough to pass vapor but tight enough to shed liquid water. Acrylic paints also hold their color longer than alkyds and are less susceptible to cracking.

That doesn't mean that nonacrylic paints are inferior, says Carl Minchew, Benjamin Moore's director of technical services. "What matters is how much acrylic or latex is in the paint and how manufacturers formulate that product." A 100 percent acrylic paint that uses 1/2 pound of resin per gallon may not be as good as a competing product that uses 1 pound of resin per gallon.



Quality exterior latex paint retains its gloss better than alkyd paint, particularly in south-facing exposures (top right). Exterior elastomeric coatings (below) must be formulated to have the proper balance of flexibility and dirt resistance. The paint on the right uses a conventional binder, while the one on the left has a binder specially designed for this type of coating.

Urethane is also used as a binder, when dispersed in a petroleum-based solvent or in water. Urethanes are noted for their overall balance of high performance properties, such as toughness, flexibility, high impact resistance, and textile strength, Stauffer says. They offer excellent abrasion resistance and will stand up when exposed to a wide variety of chemical solvents and stains.

There are two types of urethanes: aliphatic and aromatic. The latter is designed for interior applications because it tends to yellow after long exposure to sunlight. The more costly aliphatic urethane is more flexible and more UV resistant, which is why Wilkerson specified this type of paint for the field-applied coatings at Finley Stadium. Water-based urethane may also be paired with an acrylic binder to increase the resistance properties of the coating, making it useful for high-traffic areas, such as floors and stairways.

Other characteristics

The level of sheen also separates one paint from another. Flat paints contain more pigment than glossy paints, so they hide better. But glossy paints contain more binder, making them harder, more washable, and more resistant to mildew. The latter usually cost more, though that's not a rule. Glossy white paints from the same company may differ in price, but that doesn't mean their formulations vary greatly. The pricing may reflect lower manufacturing and marketing investment. "If I make a paint that only comes in white, the cost of supporting that product is relatively low," Minchew says. "But if I want a white, a line of ready-mixed colors, a base that can be colored tinted, and a series of color cards, that adds to the cost of the product."

The quest to minimize VOCs spawned a whole new product category: low-odor paints. These are used when a building, such as a hotel, health-care facility, office, or even prison, cannot be evacuated during the paint process. Simonsen tells about attending a luncheon with a representative of ICI Paints. "After we had been sitting there for an hour, he pulled out a can of ICI's Lifemaster 2000 paint, which is completely free of VOCs, from under the table," he recalls. "It was open the whole time, but nobody smelled it."

Paints appropriate for this type of visible, high-traffic area include scrubbable latex acrylics, urethanes, and low-VOC, oil-based formulas.

PAINT THE WORLD GREEN

To choose coatings with a minimal impact on the environment, considering everything from the origin of the raw materials to how the paint is sold, used, and disposed is a must. The *AIA Environmental Resource Guide* includes some simple guidelines to help architects reduce the environmental impact of the coatings they specify. The following was adapted from those guidelines.

1. The best way to reduce life-cycle costs is to specify the most durable coatings possible, even if the surface is likely to be recoated before the initial coating fails. A coating that can support additional layers will eliminate the pollution associated with stripping.
2. Opt for light-colored surfaces wherever possible. Inside, they will reduce lighting needs. Outside, they will lower the need for cooling energy by reducing solar gain.
3. Specify water-based coatings. They cause less pollution during production and release fewer VOCs during application and curing.
4. To reduce demand for raw materials, embodied energy, and disposal problems, use recycled paint (batch leftovers and paint that was ordered but never used). Available from some manufacturers and paint stores, recycled paint often comes in a narrow range of colors but is inexpensive.
5. Donate unused coatings to nonprofit organizations. Encourage paint manufacturers to do the same.
6. Write into specifications that all oil- or solvent-based coatings must be handled and disposed of as hazardous waste and that all empty steel and plastic containers be recycled.

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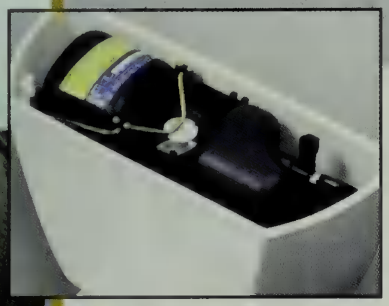
By Jerold Tierney, AIA, Architect & Partner



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About Jerold Tierney, Architect-Partner

Jerry has been in the architectural business for over twenty years. He formed a partnership ten years ago with Randy Figueiredo, establishing the firm of Tierny/Figueiredo Architects AIA in the city of Santa Rosa, California. The firm designs a wide variety of projects including residences and multi-residential buildings.

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Low-odor paints are formulated with few or no solvents. Latex paints have always included a small amount of solvent to temporarily plasticize the binder. The solvent softens the binder's particles and facilitates film formation at low temperatures. The paint smells for six or seven hours after it's applied, however. Low-odor paints use softer binders that don't require solvents for film formation and, therefore, emit no odors. A potential downside to a softer binder, says Stauffer, is that the finished film may be tacky and attract dirt. Manufacturers say they have created additives that solve these problems, but these have added 15 to 20 percent to the price. Still, for firms with a large health-care clientele, such as Gensler, low-odor paints are worth the cost.

Mixing paints with various properties is one way to achieve good results and save on costs. Seth Rosenman, AIA, of Root Rosenman Architects in Denver, pairs a high-quality primer and basecoat with a UV-resistant urethane top coat on building exteriors. Budget plays a part in this as well. At the 112-year-old Wyatt Elementary School in Denver, Rosenman tried to use an epoxy primer followed by several coats of a low-odor, scrubbable paint. The combination, he says, would have meant the children wouldn't be smelling paint fumes, while masking tape, lunch boxes, and sticky hands wouldn't destroy the finish. Unfortunately, the cost was so high, a standard latex paint was used. "But I think we all learned, next time, to set more money aside for the paint job," he says.

What next?

More new formulations are on the way as VOC restrictions tighten and special needs become more apparent. Paint companies are looking particularly at how their products are applied and are trying to find ways to put the finish on in less time and with less effort. For instance, water-based paints don't adhere well to marginally prepared surfaces, walls or floors that are chalky, grimy, or peeling, for example. But, as any painter will say, it is the prep work that makes a paint job pricey. A paint that would stick to a messy wall would save money.

In a health-care facility, there's no opportunity to close down operations and paint the walls. Specifiers must select fast-drying, low-odor latex formulations that stand up to a lot of traffic.

Better hiding ability, leveling capabilities, all-temperature formulations—these are assets that make for a better bucket of paint. Few things will make a beautiful project look worse than peeling, discolored, or splotchy paint, Gensler's Caldwell says. "Solving these kinds of technical details is what allows a design to come to fruition." ■

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "Understanding New Paint Products and Formulations" using the learning objectives provided.
- Complete the questions below, then check your answers [page 204].
- Fill out and submit the AIA/CES education reporting form [page 204] or file the form on ARCHITECTURAL RECORD's Web site at www.architecturalrecord.com to receive two AIA learning units.

QUESTIONS

1. What is the purpose of each ingredient in paint?

2. What is the difference between alkyd and latex paints?

3. What are the advantages of water-based paints?

4. How are low-odor paints made?

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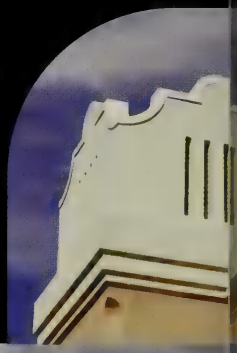

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Photos: Scalloped corners and coping fabricated in aluminum with factory-applied Kynar 500®/Hylar 5000® finish in designer color. Roof-edge treatment features arches and inverted arc combined with serpentine, parabolic and compound curves. Credits: Summit Retail Center; Birmingh Alabama; *Architect:* Crawford, McWilliams & Hatcher; *Installer:* Quality Architecture Metal & Roof

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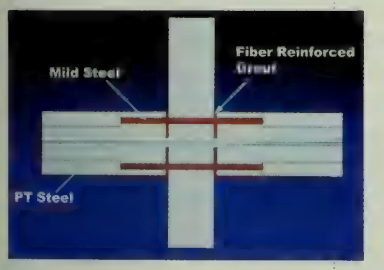
TECHBRIEFS

NEW QUAKE-RESISTANT FRAMING SYSTEM ROLLS WITH THE SHOCKWAVES

Concrete-framed buildings in high-risk seismic zones have, in the past, been limited in height. It was always believed that concrete wouldn't absorb shock waves with the same voracity as steel moment-resisting frames. But thanks to a new precast, hybrid, moment-resistant framing system, developed by a California contractor with researchers at the University of Washington in Seattle and the National Institute of Standards and Technology, the tallest precast, concrete-framed high-rise (rendering above) is climbing into the San Francisco skyline.



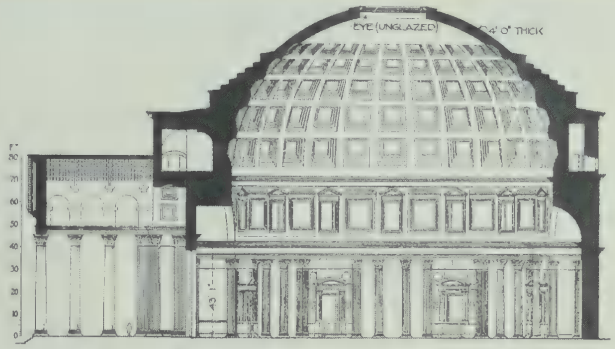
Mild steel, paired with posttensioned steel cables, runs through ducts in the beams and columns.

The 39-story Third and Mission Luxury Apartment tower, designed by Elkus Manfredi Associates in Boston, is scheduled for completion in the summer of 2001. The 420-foot-high tower includes 485 apartments, as well as some retail, parking, and office space.

The contractor, who helped to develop the framing system, is Charles Pankow Builders of Altadena, Calif. The company will use precast concrete beams and columns fabricated off-site and trucked to the downtown building site. The members are joined with mild reinforcing steel and posttensioned steel cables, which are routed through ducts in the centers of the beams and columns. It is the combination of these two materials, concrete and steel, that keeps the building together during a quake. The stretchy mild-steel rods absorb the seismic load as the columns shift. The cables, in turn, pull the columns and beams that are disturbed back into alignment.

The precast elements double as part of the building's exterior cladding. Aside from its seismic advantages, the hybrid system is credited with saving 5 to 7 percent of construction costs over a standard system of shear walls and steel framing. Pankow began developing and testing the system in 1991. It has received approval from the International Conference of Building Officials, though a special peer review of the building plans was required in San Francisco before construction could go ahead. Pankow attributes this cautiousness to the conservativism of the construction industry, as well as to the fact that concrete-framed structures require more design calculations than steel-framed projects. *Wendy Talarico*

WHERE TO TURN FOR GREEN INFO ***The Green Building Advisor,*** **a CD-ROM by E Build Inc., publishers of *Environmental Building News,* and the Center for Renewable Energy and Sustainable Technology (CREST), a nonprofit publisher, delivers advice for designing buildings that go easy on the planet. The user inputs the job's specs, and the CD provides strategies for minimizing environmental impact. These strategies are grouped by site and ecosystem, energy use, and other categories. The information can also be sorted by CSI category, level of difficulty, expense, or project stage. Clicking on a strategy provides costs, benefits, conflicts, and references to related publications. The interface is consistently attractive and fast. As a way to quickly create cost-effective, comprehensive strategies that cover the environmental bases, the *Green Building Advisor* is useful. Available from CREST, 888-442-7378; www.crest.org.** ***David Dobbs***



MINERAL WASTE MAKES "GREEN" CEMENT

By now, most people recognize that CO_2 emissions from automobiles, power generation, and manufacturing contribute to global warming. Architects can lessen these emissions by designing more efficient buildings and employing alternate energy sources, for example. But researchers now think that specifying cement made with mineral admixtures may be a significant means for reducing CO_2 emissions.

The production of Portland cement releases about one ton of CO_2 for every ton of cement produced. Worldwide, about 1.5 billion tons of cement were made last year, generating an equal amount of CO_2. Production of cement is expected to double in 25 years. The high volume of CO_2 comes from the chemical reaction that occurs when limestone, the primary ingredient in cement, is crushed and heated. The mining of the limestone also produces CO_2.

Mineral admixtures are derived from industrial waste. The most common admixture is fly ash, the particulated mineral impurities that remain after coal is burned. Other mineral admixtures include blast-furnace slag, silica fume, and rice-hull ash. They also occur naturally as volcanic rock—a by-product of the earth's combustion. Ground volcanic rock was used in the Pantheon (above) in the 2nd century A.D.

Each admixture affects concrete differently. Fly ash improves workability and reduces the amount of water that's needed. Silica fume and rice-hull ash reduce permeability. Manufacturers now limit the amount of mineral admixtures to about 20 percent of the mix, though tests show that an 80 percent fly ash mix may perform adequately.

Using admixtures in cement saves energy, cuts CO_2 emissions, reduces the limestone that's mined, and uses material that is otherwise landfilled. But there are drawbacks, chiefly a lack of field research on how admixtures affect concrete, according to the Civil Engineering Research Foundation. The foundation recently launched a study that concludes next year. *W.T.*

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UNDERSTANDING INDOOR AIR QUALITY: BIOAEROSOLS

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Historically, the subject of air quality has been focused on outdoor air. Billions of dollars have been spent in the U.S. alone on the monitoring and clean up of ambient air quality.

More recently, attention has been drawn to the indoor environment, where most of us now spend the majority of our time. The personal and economic impact of poor indoor air quality may be substantial. The Occupational Health and Safety Administration (OSHA) estimates that companies lose as much as $8 billion annually in lost productivity in the workplace and in increased medical costs.

Furthermore, OSHA believes that as many as 30 percent of all U.S. buildings have some type of indoor air quality problem. Indoor air quality problems, federal officials estimate, affect up to 20 million people each year.

AIA/ARCHITECTURAL RECORD Continuing Education

Use the learning objectives below to focus your study as you read ***Understanding Indoor Air Quality: Bioaerosols.*** *To earn two AIA/CES Learning Units including one hour of health safety welfare credit, answer the questions on page 146 and follow the reporting instructions on page 204. Or use the Continuing Education self report form on www.architecturalrecord.com.*

Learning Objectives:

After reading ***Understanding Indoor Air Management: Bioaerosols*** *you will be able to:*

- *Describe possible sources of indoor air quality problems.*
- *Explain what can be done to treat indoor air quality problems.*
- *Describe the effects of dust and particles on indoor air quality.*
- *Describe to what extent carpet is a contributor to indoor air pollution.*

Because people have less control over the indoor environment in their offices than they do in their homes, and for a number of other reasons associated with today's office buildings, reported health problems are on the rise. Problems are not limited to our offices, however. Asthma rates, especially among children, have risen each year for the past 20 years, according to federal health officials. The likely reason: children spend an increasing portion of their days indoors.

Health and comfort are influenced by those who design and manage buildings. Science and common sense generally drive good indoor environmental management. The science of indoor air quality is in its infancy. So little is known, in fact, that the U.S. Environmental Protection Agency recently began two major studies of indoor air quality in more than 150 public and commercial buildings.

EPA studies of human exposure to air pollutants indicate that indoor air levels of many pollutants may be 2-5 times, and occasionally more than 100 times, higher than outdoor levels. Recent comparative risk studies by the EPA and its Science Advisory Board rank indoor air pollution among the top five environmental risks to public health.

The choices made by architects and designers impact both short-term and long-term indoor environmental quality. Consideration must be given to ventilation, building materials and furnishings. VOCs from new products may be important in the short-term, but the long-term performance of a building will be influenced more by the ventilation and care a building receives.

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What are VOCs?

Aside from buildings being too hot or too cold, a majority of complaints of indoor air quality problems stem from two primary sources: what are known as volatile organic compounds and what we may broadly refer to as "particles."

Volatile organic compounds are found in everything from paints and coatings to underarm deodorant and cleaning fluids. They are a major concern of the EPA and of state air quality regulators. New furnishings, building supplies and cleaning agents are frequent sources of indoor air quality complaints.

There is a body of published research indicating that individuals are more likely to report a higher number and variety of symptoms in the presence of objectionable odors than when not exposed to such triggers. Odors can create stress and may lead to headaches, nausea and other symptoms as a result. Although VOCs have been speculated to cause non-specific health-related complaints in chronic problem buildings, studies have not found direct cause-and-effect relationships. More recently, research has turned toward dusts and particles. Several recent studies suggest that "dusts" are associated with many of the human health symptoms reported in "sick" buildings.

There is considerable debate over the value of both building "bake-out" and pre-airing of products. Science does not provide much support for the effectiveness of bake-outs. In most cases, the temperature differential is not high enough or long enough to have any significant impact on emissions.

For most materials, VOC emission rates will be diffusion-rate-controlled. That means that the amount of VOC emitted cannot exceed the amount that can migrate from the interior of the material to the surface, a relatively slow process (typical VOC half-lives are several days to weeks). As a result, one could expect only a modest increase in the diffusion rate for each 10-degree C increase in temperature. It, thus, makes more sense to ventilate more aggressively during the first few weeks of a building's occupancy. For most building materials, VOC contributions to indoor air quality will decline naturally within a few weeks.

Pre-airing, which involves unpacking materials and letting them sit for several days to off-gas, is also a process of little tangible benefit. For many materials, the majority of VOCs measured in the first 24 hours have accumulated on surfaces while stored in packaging. These emissions can be much more easily managed by ventilation on site. After the surface VOCs have dissipated, the emission properties of the material will follow the same diffusion rate control model we just alluded to. Letting the material sit in a warehouse for a few more days has relatively little additional impact.

Off-site airing out of carpet is a poor investment of time and money. Emissions from adhesives exceed carpet emissions by orders of magnitude.

What are Bioaerosols?

Particles, like dust, can be relatively benign. But the category also includes "bioaerosols," airborne pollutants that either are or were living organisms. The list includes molds and other fungi, bacteria, viruses, pollen and dust mites. Particles can be irritating to eyes and upper respiratory systems. Also, some of the bioaerosols we encounter are "pathogenic"(e.g. Legionella—"Legionnaire's Disease"), allergenic (e.g. pollens, animal danders) and toxic (e.g. mycotoxins from molds and endotoxins from gram negative bacteria).

There are no laws regulating bioaerosols. But there soon may be, say federal officials. Increasing scientific data indicating there are health risks associated with bioaerosol exposure may lead to enforcement. Presently, however, assessing risk of bioaerosols and determining what may be a "safe" level of exposure is a fledgling science, and extremely difficult one. Where the human immune system is involved, reactions to bioaerosols are very individual-specific and can be highly variable across the population.

Because microorganisms need water to grow, moisture plays a critical role in many indoor air quality problems. Accumulation of moisture via leaks, broken pipes or poor dehumidification by HVAC systems can lead to microbial growth. Fungi are most common because require less moisture to readily grow. Relative humidity of 75-85% is sufficient for significant growth. Bacteria do not begin to aggressively amplify unless the humidity is very high, on the order of 95%, or if standing water is present.

Ventilation must accommodate day-to-day VOC and particle contributions from building occupants. This means displacing respired carbon dioxide, body odors, fragrances, skin flakes and other particles shed from clothing and from office equipment like copiers and printers. The other crucial role of ventilation is dehumidification. Improperly specified heating, ventilating and air conditioning equipment may induce moist air into the room. Condensation can occur, which will, in turn, provide the water necessary for microorganisms to grow.

Choices made by architects impact both short and long term indoor environmental quality

Give consideration to ventilation, building materials and furnishings

Take preventive measures to keep indoor environments clean

How Bioaerosols Enter the Building

It is important to understand how most of the bioaerosols we encounter enter our buildings: most appear to come in with us. The microbiology of indoor air in most buildings looks like outdoor air. The types of fungi typically found indoors are the same as those found outdoors, albeit at lower levels. If higher levels and different distributions of fungal species are found indoors than out, it is likely there is an indoor fungal source. Implicit in this observation is a moisture problem in the building.

Aside from obvious water leaks, fungal growth sustaining moisture can enter a building in some subtle ways. For example, hot humid air carries a considerable amount of moisture. If this moisture laden air works it's way into the building, the likelihood of water condensing on cooler surfaces (temperatures below the dewpoint) increases. Condensation can happen on interior surfaces or behind walls next to the exterior of the building. Moist air enters the building via inadequate de-humidification by the HVAC system or infiltration through the building shell as a result of negative internal pressures. A balanced ventilation system, which provides uniform positive pressures, will minimize moist air infiltration. In addition, chilling incoming air to 50 - 55 deg. F will remove sufficient moisture to provide a relative humidity of 50-60% when raised back to a comfortable room temperature. Finally, recognize that drier climates can also have problems with moisture condensing indoors if dehumidification is inadequate - air at 100 deg. F and 40% RH will condense moisture on a 70 deg. F surface.

Take design steps to keep bioaerosols out

Can we Eliminate Bioaerosol Pollution?

It is critical to consider in the design phase how a building will be maintained. Therefore, it may be useful to include a cleaning professional or facility manager early in design to provide insight into possible long-term maintenance problems.

The focus of those who manage buildings typically has been on cosmetics and a devotion to extending the life of materials. Only recently has "cleaning for health" become a consideration for facilities managers. Owners and designers also are generally guilty of ignoring the long-term effects of their buildings. The most egregious example may be the design of office cubicles, which from an indoor environmental health standpoint are considered by some to be the scourge of contemporary commercial practice.

From a clinical health viewpoint, clustering workers in adjoining cubicles is like clustering children in grade-school classrooms, a ripe environment for the communication of various illnesses. Cubicles also are difficult to keep clean; reducing cluttered areas is helpful in reducing exposure to dust.

The more difficult an area is to clean, the less likely it is to be cleaned. Vertical piles of papers and books have the potential to accumulate substantial quantities of dust. When they are moved, particles are discharged into the air, and short-term exposures can be high.

Some of the most effective steps toward keeping indoor environments clean are preventative: designing entryways and sidewalks for ease of maintenance and, thereafter, keeping them clean will help. Walkoff mats are important at entrances.

These should be of sufficient size to assure at least four footfalls before stepping onto interior flooring. Walkoff mats also require frequent vacuuming and regular deep cleaning.

Routine maintenance and cleaning of the ventilation system also is important, and it is critical that HVAC systems are designed and installed with long-term maintenance considerations in mind. Filters must be replaced regularly, and systems need to be inspected for standing water. Leaks or plugged drains can lead to fungal and bacterial growth, creating the potential for microbiological debris to be periodically aerosolized and dispersed into the building. Fresh air intakes must be located away from possible sources of pollution, and should be inspected frequently. It is important that they be located in a way that makes periodic inspection as easy as possible.

Most commercial cleaning methods can reduce accumulated microbiological debris from carpets. Some are very effective. Good quality vacuums with high-efficient filters remove up to 99 percent of particles, and hot water extraction has a significant impact on total soil in the carpet and on subsequent airborne bioaerosol levels, even from heavily contaminated carpet.

There is a substantial amount of research underway addressing the efficacy of various cleaning methods and the relationship between flooring types and the release of particles. The research is taking place both in industrial laboratories and in university environmental research facilities.

One of the questions under study is whether carpet is a contributor to airborne contaminants or a deterrent: do materials present in carpet present a potential risk because they can enter the breathing zone when disturbed? Or does carpet act as a sink, to trap and hold particles, and if so, under what circumstances could carpet become a secondary source of airborne particles?

Photo: Modular Hi-Rib Interlocking rubber floor mat: Pawling Corp.

Carpet: a Contributor to Bioaerosol Contamination?

Researchers at the Harry Reid Center for Environmental Studies at the University of Nevada Las Vegas have studied the release of settled particles from flooring materials after a "disturbance." Two interesting observations were made: the first is that a relatively small proportion of settled particles are discharged into the air by foot traffic (less than 0.002%); the second is that successive disturbances raised dramatically fewer particles than previous ones.

The Reid data implies that easily re-suspended particles will not accumulate on active surfaces. Particles will move deeper into the carpets, they will be removed from the building via ventilation and filtration, or they will settle on a more quiescent surface. The latter most likely provide the greatest opportunity for significant short-term exposures. Therefore, from a human health standpoint, it may be more important that little-used or infrequently cleaned areas receive more attention. From a design standpoint, avoid creating spaces resistant to maintenance.

A study released earlier this year by Atlanta, GA-based Air Quality Sciences Inc. (AQS) evaluated the impact of soiled carpet on the indoor environment and attempted to determine the effectiveness of carpet cleaning in the removal of biological contaminants.

In the experiment, soiled carpet was removed from two buildings, one where environmental conditions had been maintained at "normal" conditions of 70-75 degrees F and 40-60% relative humidity, and one where "extreme" conditions of 80-90 degrees F and 85-95% relative humidity existed. In the latter, fungal grown was rampant and affected all surfaces including wood and masonary. The carpets were removed from the buildings and installed in controlled environmental chambers where original building temperatures and humidities were replicated.

While in the environmental chamber, airborne contaminants were measured prior to, and following, cleaning. Extractable carpet dust was collected and evaluated for biocontaminant levels before and after cleaning. The study measured fungi, bacteria, dust mite allergens, cat allergens and cockroach allergens.

Design affects health and comfort

Data indicate that the carpet removed from the "normal" environment had no impact on the presence of airborne contaminants, said AQS. The carpet from the "extreme" environment with visible surface mold could contribute fungi to the surrounding air, but did not contribute dust mite allergens or bacteria. Carpet cleaning effectively removed biocontaminants from the carpet, and the cleaning processes themselves had little impact on pollutant levels within surrounding indoor air, AQS concluded.

In many cases, potential indoor air quality problems may be discovered through "virtual" walkthroughs of buildings prior to construction to determine if obvious pollutant sources exist and whether deficiencies in HVAC systems exist that may lead to long-term difficulties.

The EPA and the National Institute for Occupational Safety and Health have created a reference guide: Building Air Quality: A Guide for Building Owners and Facility Managers. Although intended as a post-construction resource, the guide may serve designers by providing a blueprint for long-term building health. The guide can be downloaded from the EPA website at www.epa.gov.

Little-used areas need considerable attention

As a manufacturer of many products used in interior furnishings and building construction, DuPont has taken an active interest in the study of indoor air. Over the past 10 years, DuPont has conducted research into how building materials relate to indoor air quality. In the early 1990s, DuPont created a highly specialized testing facility to study emission properties of carpets and other materials. This laboratory utilizes small environmental chambers and is one of only a couple dozen labs in North America with this research capability. This is the only widely accepted technology for the determination of material emission rates, which can be used in human exposure models and risk assessments. DuPont is also actively involved in sensory irritation research on chemical mixtures—i.e., levels of exposure that could lead to irritation of the eyes and upper respiratory tract. Recent research has investigated relationships between floorcoverings and airborne particles.

DuPont manufactures Antron® nylon, which is used in a large percentage of the carpet installed in commercial interiors today. A carpet of DuPont Antron® nylon provides superior resistance to wear and excellent cleanability for the most demanding commercial installations. DuPont also provides flooring installation, carpet maintenance and carpet reclamation/recycling through its subsidiary, DuPont Flooring Systems.

VISIT OUR WEB SITE AT WWW.DUPONTCOMMERCIAL.COM

LEARNING OBJECTIVES

After reading ***Understanding Indoor Air Quality: Bioaerosols*** you will be able to:

- Describe possible sources of indoor air quality problems.
- Explain what can be done to treat indoor air quality problems.
- Describe the effects of dust and particles on indoor air quality.
- Describe to what extent carpet is a contributor to indoor air pollution.

INSTRUCTION

Refer to the learning objectives above. Complete the questions below. Then turn the page upside down and check your answers. Fill out the self report form (page 204) and submit it or use the Continuing Education self report form on *Record's* web site, www. architecturalrecord.com to receive two AIA/CES Learning Units including one hour of health safety welfare credit.

QUESTIONS

1. What role do dust and particles have on indoor air quality?

2. Is carpet frequently a contributor to indoor air quality pollution?

3. What role does ventilation play in indoor air quality?

4. Is "bake-out" an effective practice prior to occupying a building?

5. How can architects "design" for the long-term health of a building?

6. What is the effect of cleaning on indoor air quality?

ANSWERS

1. Dust and particles include bioaerosols. These often come into a building with its occupants. Particles are shed from skin, clothing and shoes. Other particles come in on the air, either through open doors and windows, or through ventilating systems. Moisture in buildings can support the growth of microorganisms with potential for health problems.

2. Research suggests that easily re-suspended particles will not accumulate on active surfaces. Particles will move deeper into the pile in the case of carpet, they will be removed via ventilation and filtration, or they will move to a more quiescent location.

3. Ventilation expels the build-up of VOCs and particles, well as respired carbon dioxide, body odors, fragrances, heat build-up and humidity. Controlling humidity reduces microorganisms and bacterial growth.

4. Science provides little evidence of the effectiveness of bake-outs. In most cases, the temperature differential is not high enough or long enough to have any significant impact on emissions.

5. Evidence suggests that less-traveled areas of public buildings frequently are grater contributors to indoor air quality problems than highly traveled areas, and structures that contribute to piled papers are a repository for potential pollutants. Architects should design with help in mind, avoiding cubicles when possible, keeping work areas open and avoiding tight spaces.

6. Cleaning very simply removes bioaerosols and other dusts which reduces exposures of building occupants. Lower exposures translates to lower probabilities of adverse health effects.

FOR MORE INFORMATION CONTACT:

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CIRCLE 45 ON INQUIRY CARD

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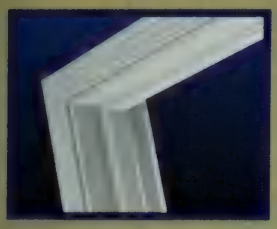

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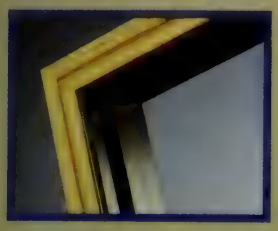

TA-35 PVC Colonial Casing
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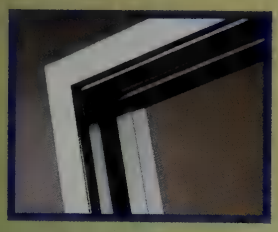

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CIRCLE 46 ON INQUIRY CARD

Door Beauty
More Than Skin Deep

Performance Depends On What's Inside

Legend has it that P.T. Barnum, seeking a way to move patrons out of his sideshow of sword swallowers, oddities and Tom Thumb, posted a sign that read "This Way To The Great Egress." His small town customers, not familiar with the word "egress," eagerly made their way in the prescribed direction, only to find that they were outside.

Egress and its companion, ingress, of course, are critical to the design of every building. This includes entering or leaving the building itself, and passage from one part of a structure to another. Design dictates not only that this be accomplished functionally, but aesthetically as well. Doors that accomplish both objectives are critical to the process. Doors comprise a significant part of the envelope of the finished building. This makes the selection of type, style, color and function critical to the design success of any structure.

Stile and rail doors, such as these Algoma Hardwoods, Inc. units, can be manufactured with a variety of hardwood lumber and veneers for many different applications. These office doors resemble nothing so much as fine furniture or hand-crafted cabinetry.

AIA / ARCHITECTURAL RECORD
Continuing Education

Use the learning objectives below to focus your study as you read ***Door Beauty: More Than Skin Deep.*** *To earn two AIA/CES Learning Units answer the questions on page 152 and follow the reporting instructions on page 204. Or use the Continuing Education reporting form on Record's web site, www.architecturalrecord.com.*

Learning Objectives:
After reading ***Door Beauty: More Than Skin Deep*** *you will be able to:*
- *Describe the difference between solid core and hollow core wood doors.*
- *Describe the common types of veneer matching used on doors.*
- *Compare the construction of a wood flush door and an architectural stile and rail door.*

No other doors contribute to the aesthetic part of the equation more than those fashioned in wood. The warmth, beauty and color of wood doors have made them a choice of designers of buildings ranging from housing to commercial structures to institutional and religious buildings. They also offer an opportunity to create a unique look and feel. Because wood is a natural product, it is ever-changing. No two wood doors ever look alike.

Wood also offers an opportunity to address environmental concerns. Its unique position among materials used in door construction as a renewable resource tends to make it the most environmentally friendly. Closely tied to this issue is the issue of economics. Domestic hardwoods, for example, are more readily available than imported veneers. Common species usually provide greater cost efficiency and are more readily available. They also provide advantages in manufacture. Machine operators are more familiar with the common species, therefore are also more likely to avoid practices that waste material or provide a less than satisfactory final product.

These factors should not deter the designer from selecting more exotic species, if there is a strong aesthetic reason for so doing. These and other considerations, however, must be factored in early in the design process. The best way to avoid conflicts is for the design professional to be very exacting on the front end in writing the specification for both interior and exterior doors. To achieve the optimum look and

Advertising Supplement Provided by Window and Door Manufacturers Association

functionality, it is important to understand how doors are manufactured and how their various components contribute to the final appearance and usage.

Function Follows Form

Understanding door construction can provide the design professional with a guide as to the type of door that will perform at the highest level. Although there are a number of specialty door constructions (and we will discuss some of the more important ones later in this article), the two most common, and those for which the Window & Door Manufacturers Association have adopted approved industry specifications, include Architectural Wood Flush Doors and Architectural Stile and Rail Doors.

The difference between the two is fundamental. Architectural Wood Flush Doors consist of a core with facing attached. This facing, as the designation suggests, is usually flat. A true Architectural Stile and Rail Door consists of individual stiles, rails, mullions, panels or glazing assembled with prescribed joinery methods. Such doors resemble nothing so much as fine furniture. Stile and rail doors may be employed in exterior and interior applications while flush wood doors are usually intended for interior applications.

Architectural Wood Flush Doors come in two basic types–solid-core and hollow-core. Solid core doors have a variety of interior structures. The most often employed core material is particleboard, but a variety of other core materials, depending on desired function and stability, can also be used. These include structural composite lumbers, such as laminated strand lumber, staved lumber and mineral core. The latter is employed to provide fire protection. Fire doors usually carry a 20-minute, 3/4-hour, 1-hour or 1-1/2-hour fire rating. Other materials can also be incorporated to provide properties such as sound attenuation, radiation protection (such as in doors in X-ray rooms at hospitals), and even bullet-proofing. Again, we'll discuss these options later in this article.

Made to order doors provide maximum flexibility

Plain sliced red oak veneer on this pair of Weyerhaeuser architectural flush doors provides a striking entrance to a corporate conference room.nference rooms in an Embassy Suites hotel.

Core Provides Stability

The core provides the internal structure of the door and adds to its structural stability. To this core, whatever its composition, are applied other components. These include a top and bottom horizontal rails, vertical stiles and outer skin. Doors may either be five-ply or seven-ply. In a five-ply door, a crossband and then the exterior or face veneer are applied over the core, stiles and rails. This application is to both sides of the door. The crossband prevents telegraphing of the core material through to the face veneer. A seven-ply door adds a back veneer, which is applied between the crossband and the face veneer. The crossband material may be either hardwood veneer material or engineered wood materials. When the crossbanding has a directional grain, it is placed at right angles to the grain of the face material. In hollow core doors, the most frequently used material consists of a honeycomb expanded to the edges of the door, although it may also be a ladder or grid core. In hollow-core doors, additional blocking provides structural reinforcement. This blocking also provides a place for attaching hardware, such as locksets, hinges and even door hooks. Hollow core doors also include heftier bottom and top horizontal rails and vertical stiles than their solid core brethren.

Cores provide structural stability

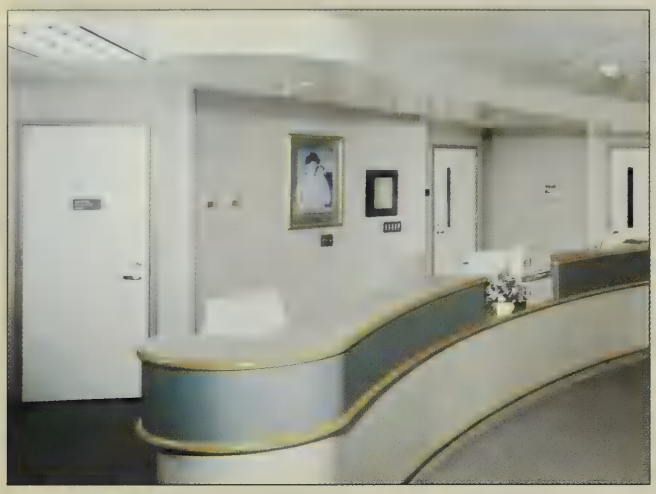
Alternatives to wood veneer facings also can be employed, for example, if the door facing is to have an opaque facing. Three different grades are included in the WDMA standard (I.S. 1A-97). Premium grade is a medium density overlay, a thermosetting resin designed to take and hold finish. Custom grade consists of a close grain hardwood or hardboard. Economy grades are at mill option.

Made to Order

A true Architectural Stile and Rail Door includes panels with a core surfaced by the various components described above. These doors are manufactured with an engineered construction designed to minimize the movement of the door due to

variations in temperature and humidity. The construction better utilizes materials, thereby helping to sustain the supply of natural resources. An important factor for the designer is that Architectural Stile and Rail Doors can be made-to-order, allowing flexibility in grades, wood species, layout and hardware type.

To provide guidelines in the construction of these doors, the newest industry standard of the Window & Door Manufacturers Association was published just this year. Industry Standard I.S.6A-99 provides guidelines to help guide the design professional. Essentially, there are two grades available in such doors. Custom grade is most commonly specified when a normal degree of quality control is required, or when a mill option paint grade is necessary. Premium grade is specified in projects that have a high degree of visibility.



Designers often need to take special requirements into consideration when choosing doors. A typical example—these fire-rated doors with an opaque finish provided by VT Industries for a hospital-project.

Veneer patterns affect both design and color

Architectural Stile and Rail Wood Doors allow for two major core types. The first of these is a staved lumber core, that consists of blocks or strips of wood. The cores must contain one species of wood only and must have a moisture content between 6 percent and 12 percent. Butt joints between blocks must be tight and staggered in adjacent rows. Another option is the use of structure composite lumber cores meeting performance standards established by the WDMA Methodology for Recognition of Structural Lumber in Millwork. Alternate composite materials may be used only if the manufacturer can demonstrate that they meet the materials and methods prescribed by that WDMA methodology in terms of quality, strength, effectiveness, fire resistance, durability and safety.

An advantage to the designer of Architectural Stile and Rail Wood Doors is that virtually any wood type may be specified to meet a design requirement. Panel faces can be red or white oak, ash, birch, maple, or poplar, walnut, cherry, African or Honduras Mahogany, pecan, hickory and even white pine or Douglas fir.

The design professional who wishes to employ such doors in a project, however, must be diligent in working with the door manufacturer early in the design process. Because of the custom nature of Architectural Stile and Rail Wood Doors, the earlier the manufacturer is included in the design process the more satisfactory will be the final result. The manufacturer can offer advice on structure, wood species, construction details and finishing to ensure that the final product will meet the designer's objectives.

Another important consideration that the design professional must take into account is how various veneer patterns can change the design, or even the color of Architectural Wood Doors. Veneer patterns depend on two major factors–how the veneers are machined and then how they are matched across the face of the veneer. Appearance also depends upon the distinctive characteristics of each species and the variation within each species. In the so-called "natural" grades of some wood species (particularly ash, birch and maple), both the heartwood and sapwood make up the veneer. The color contrast between the two produces marked differences in the finished veneer.

Veneer cutting also plays a major role in the final appearance. The way in which the log is cut in relation to its annual growth rings determines the veneer appearance. A rotary cut, for example, follows the log's annual growth rings, thereby providing a general, bold, random appearance. A plain sliced or flat cut is sliced parallel to a line through the center of the log. The result—cathedral and straight grain patterns. Individual pieces of veneer are kept in the order in which they are sliced. This results in a natural grain progression when assembled as veneer faces. Quarter cutting produces a series of stripes that vary in width from species to species.

Finishes provide fi appearanc while promotin durability

(Book matching, however, alternates the so-called "tight" and "loose" faces in adjacent pieces of veneer. Thus they may stain differently, resulting in a noticeable color variation, an effect that can be minimized through proper sanding and finishing techniques. Usually book matching is used with rotary, plain sliced and quarter cut veneers.

Slip match involves placing of adjoining pieces of venee in sequence without turning over every other piece. In this method, the grain figure repeats but joints don't show a mirrored effect. Slip matching eliminates the barber pole effect i

ter cut veneers. In taller doors, this may cause a sloping ›arance in the veneer.

Random matching is not commonly used in doors. It ives choosing specially selected veneer pieces of varying hs from multiple logs with dissimilar color and grain to luce a "board-like" appearance.

Pleasing match is a face containing veneer pieces from or more logs providing a pleasing overall appearance. grain of various pieces do not need to be matched, but p color contrast should not be apparent at the joints.

ishes Provide Beauty, Durability

hing of wood doors is critical. In today's environmentally ›ct world, the finish chosen becomes a major considera-

Modern finishing techniques utilize a variety of ›r-based stains and UV-cured topcoats. These provide ıty as well as durability. Both standard and custom :hed colors are available. Manufacturers, however, sug- that finishing of doors should be specified as factory ied. Key to any good finish is correct preparation and the n and controlled environment of a factory can contribute ıe final finish.

ıitectural stile and rail doors, such as this beautiful Morgan oak ance door with clear and gray glass lights and sidelights, can be om designed to fit a variety of building styles and types.

Machining is another area that manufacturers suggest be left to them in their factories. Machining is limited only by fire approvals and hardware configuration. The manufacturers deal with both issues on a daily basis and are best equipped to properly machine the doors for onsite installation. In fact, whenever possible, it is desirable to deliver doors to the jobsite prehung in their frames. A task often handled by a door dealer or jobber, a prehung unit offers two major advantages. First, since it is hung in a controlled manufacturing process, it is more likely to be dimensionally accurate and stable. Further, the framing helps protect the unit from damage during shipping and installation.

Internal construction features create specialty doors

Finally, a word about specialty applications. These include such things as fire protection, sound attenuation, radiation protection, and even bullet-proofing in light of recent headlines.

Working with door manufacturers from the onset of the design process to fulfill these special needs is strongly advocated. A number of manufacturers, for example, provide doors manufactured with particleboard, structural composite lumber or stave core and continuous lead sheets from edge to edge in the center of the door or between the crossbanding and the core for places where radiation might be a problem, such as in hospital X-ray rooms. Others provide doors that are bullet-proof, either through the application of exterior facing materials or through the installation of ballistic rated materials within the core assembly. Sound attenuation where privacy and discretion are desired can be provided in specially constructed doors that incorporate sound deadening materials within the core and materials that prevent the faces from vibrating in unison. These also include special perimeter gasketing to deaden sound transmission. Virtually every manufacturer provides doors conforming to fire protection standards. Doors conforming to 20-minute fire ratings are for smoke and draft control between rooms or office corridors. Those carrying a 3/4-hour rating are designed for use in corridor and room partitions. One-hour rated doors are designed for use in 1-hour enclosures in vertical exitways. Ninety-minute rated doors are to be used in two-hour walls in vertical entryways and in fire walls.

There are even doors manufactured with wire mesh on the interior that is grounded with electrical leads through the hinges to the door frame to provide an electrostatic shield.

Door selection decisions also must take into consideration the requirements of the Americans With Disability Act. All manufacturers are well aware of the provisions of that Act as they relate to door width, swing, hardware type and installation. Again, consulting with door manufacturers early in the design process is the easiest way to ensure that the doors in your next building will not bar access to any person.

LEARNING OBJECTIVES:

After reading *Door Beauty: More Than Skin Deep* you will be able to:

- Describe the difference between solid core and hollow core wood doors.
- Describe the common types of veneer matching used on doors.
- Compare the construction of a wood flush door and an architectural stile and rail door.

INSTRUCTIONS

Refer to the learning objectives above.
Complete the questions below. Then turn the page upside down and check your answers.
Fill out the reporting form on page 204 and submit it or use the Continuing Education reporting form on *Record*'s web site, www.architecturalrecord.com to receive two AIA/CES Learning Units.

QUESTIONS

1. What is the difference in construction of a wood flush door and a stile and rail door?

2. What are the differences between solid core doors and hollow core doors?

3. What advantages do architectural stile and rail doors offer?

4. What do the cores of stile and rail doors consist of?

5. What is the advantage of factory applied finishes?

6. What are the most common types of veneer matching used in doors?

ANSWERS

1. Wood flush doors consist of a core with facing attached which is flat. Stile and rail doors consist of individual stiles, rails, mullions, panels or glazing assembled with prescribed joinery methods.

2. Solid core doors have a variety of interior structures. Usually the core material is particleboard, but other core materials can be structural composite lumbers, such as laminated strand lumber, staved lumber and mineral cores. The core provides the internal structure of the door and adds to its structural stability. Other components are applied, including top and bottom horizontal rails, vertical stiles and outer skin. Doors may either be five-ply or seven-ply. In a five-ply door a crossband is applied to both sides of the door to prevent telegraphing of the core material through to the face veneer. A seven-ply door adds a back veneer of either hardwood or engineered wood between the crossband and the face veneer.

3. In hollow core doors, a honeycomb or grid material is expanded to the edges of the door. Additional blocking provides structural reinforcement and a place for attaching hardware. Hollow core doors also include heftier bottom and top horizontal rails and vertical stiles than solid core doors.

4. Architectural stile and rail doors have an engineered construction designed to minimize the movement of the door due to variations in temperature and humidity. The construction better utilizes materials, thereby helping to sustain the supply of natural resources

5. Architectural stile and rail doors allow for two major core types. The first of these is a staved lumber core that consists of blocks or strips of wood. The cores must contain one species of wood only and must have a moisture content between 6 percent and 12 percent. Butt joints between blocks must be tight and staggered in adjacent rows. Another option is the use of structure composite lumber cores meeting performance standards established by WDMA methodology. Alternate composite materials may be used only if the manufacturer can demonstrate that they meet the materials and methods prescribed by the WDMA methodology in terms of quality, strength, effectiveness, fire resistance, durability and safety.

6. Factory applied finishes guarantee controls that field applications cannot guarantee. The factory environment can control dust, drying time, exhausting of noxious fumes and proper disposal of chemicals. The factory can also assure correct preparation of the product before the finish is applied which is key to a good finish.

7. The most common type of veneer used is book matching where every other piece of veneer is turned over so that adjacent pieces open like pages in a book with a mirror effect. This method yields a maximum continuity of grain, however the facing pieces of veneer may stain differently. Slip match involves placing of adjoining pieces of veneer in sequence without turning over every other piece. In this method, the grain figure repeats but joints don't show a mirrored effect.

Pleasing match is a face containing veneer pieces from one or more logs providing pleasing overall appearance. The grain of various pieces does not need to be matched, but sharp color contrast should not be apparent at the joints. Random match, not commonly used in doors, uses selected veneer pieces of varying widths from multiple logs with dissimilar color and grain to produce a "board-like" look.

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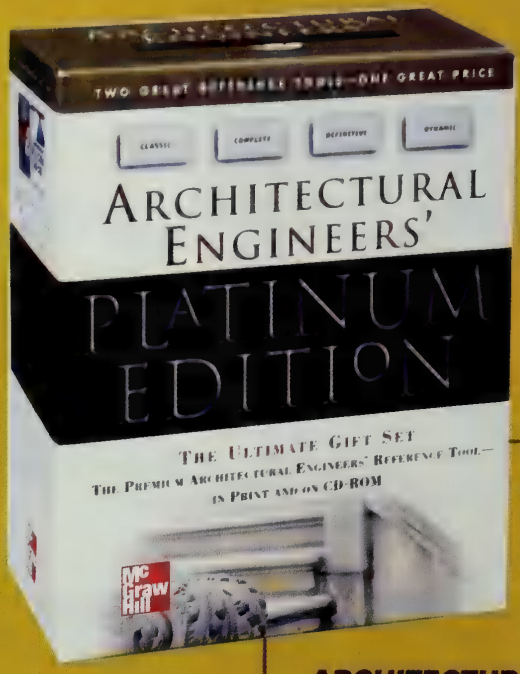

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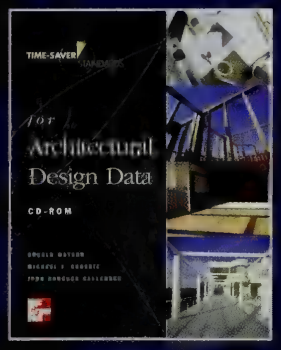

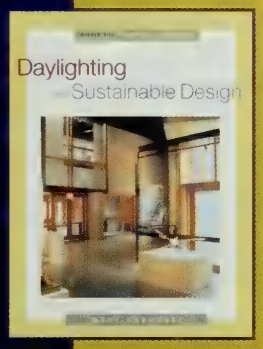

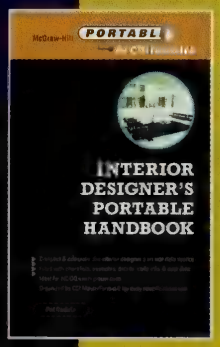

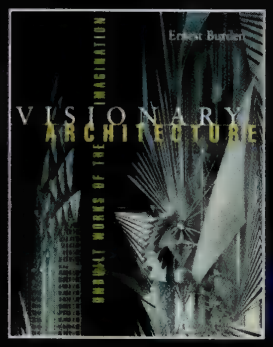

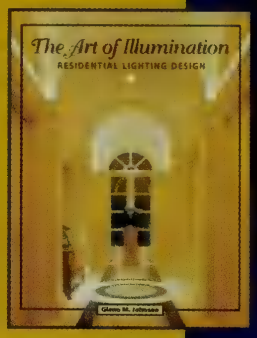

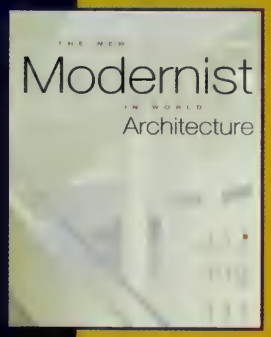

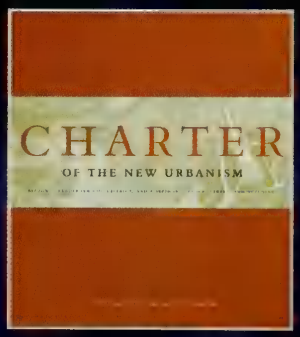

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LIGHTING...

What the four photographs on this page have in common, besides their use in stories in this month's Record Lighting section, is that they all use indirect lighting. What is indirect lighting? Maybe I can best explain by illustrating what it isn't. There is a small rotisserie on the back counter at the deli in my neighborhood. Except for its front door, which has a glass-viewing panel, the interior is matte black. Inside, chickens rotate on skewers a few inches away from bright reflector lamps. The lamps aren't necessarily needed to keep the chickens hot—that could be done with gas or electric heating elements. What they do is light the chicken directly, bringing out its golden-brown color and giving the skin a delicate sheen. You might want to light actors, jewelry, or crystal the same way. But not everything should be lit like a rotisserie.

Maybe the best way to think of indirect lighting is that the light is visible, but the source is not. At a conference center at the Blue Cross Blue Shield of Illinois headquarters in Chicago (1) lighting designer Steven Margulies of Cosentini Lighting Design used an indirectly lit slot in the ceiling to trace the main circulation route in a hallway. Likewise, Ann Kale of Ann Kale Associates lit a grand stair hall at the Xerox offices in New York (4) using downlights tucked into a cove that runs around the perimeter of the room. The lights rake the wall at a low angle, throwing the inset, red-lacquered panels that form the logo into relief.

Grenald Waldron Associates used uplighting to illuminate an outdoor arcade at the University of Pennsylvania in Philadelphia (3). Of course, downlights could have been used, but the more even, indirect light chosen by the designers produces little glare, if any, and is easier on the eyes. People moving through space at night seem to feel safer if they are not lit as if they were on stage—I bet the chickens would agree. At other times, the effect of stagelike light is perfect: Michael Hooker of MSH Visual Planners used shades of blue light to flood the area in front of the House of Blues Hotel (2) at Marina City in Chicago, bouncing light off the building onto the sidewalk. The light also emphasizes some of the details on Bertram Goldberg's original Marina City towers (left in the photo) and the riblike projections on the cornice of the hotel. It looks spooky in the photo, but when you're there, the effect is great. Charles Linn, AIA

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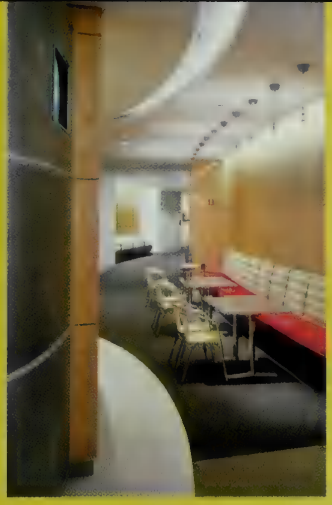

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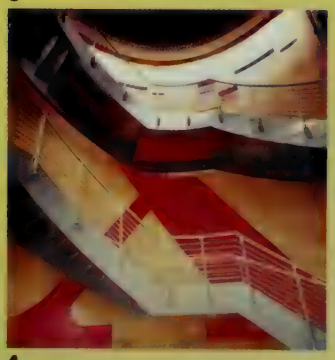

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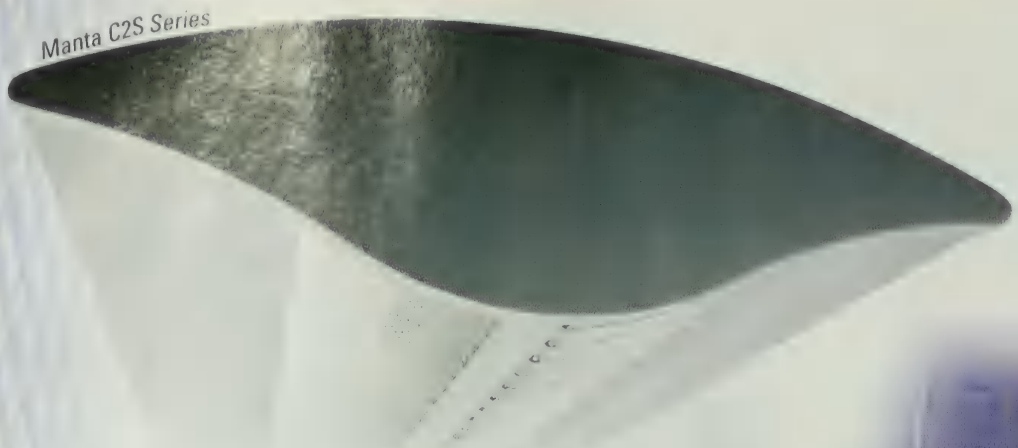

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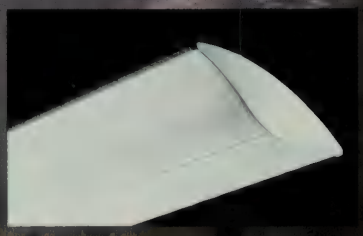

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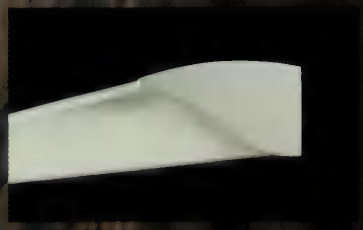

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Whether you are looking for an interactive Star Wars telephone, a chef's fork with a built-in temperature gauge, or an electronic shoe polisher, the Brookstone store is the place for you. The company that started out marketing tools for left-handed people and now sells hard-to-find tools and other artifacts for the upscale and eccentric buyer, wanted the design of its new flagship store at the Venetian Hotel in Las Vegas to enhance its adventurous image.

Designer James Mansour, of the New York-based firm Mansour Design, specified a new kind of lamp made of light-emitting diodes (LEDs) for use in Brookstone's display and signage lighting.

Color Kinetics, a Boston-based company, designs and manufactures the lamps using what it calls "Chromacore" technology. The new lamps generate colored light using red, green, and blue LEDs. A built-in microprocessor mixes the colors by varying the brightness of the LEDs, making it possible to create 16.7 million colors (these are 24-bit RGB colors, similar to those produced by a computer monitor), an almost infinite variety.

In contrast, conventional lighting techniques use gels or dichroic filters to absorb all light except the desired color. To change colors in conventional lighting, a mechanism must move different filters in front of the light.

These new lamps have no moving parts, operate at 24 volts DC, and can last up to 100,000 elapsed hours—about 11 years of continuous use. The lights also operate at very cool temperatures, so they can be used close to fabric, artwork, or in other areas where ordinary heat- or UV-emitting lamps might damage fragile objects.

There are three styles: one has a bipin mount and can be used in many standard low-voltage track lights; one is a cove light with a row of LEDs mounted on it and comes in 6- or 12-inch increments with a 100-degree beamspread; and the third is a C-series fixture, an enclosed assembly that looks like a tiny track light and comes with built-in sockets for controllers. The C-series has a 22-degree beamspread and includes a model for outdoor use.

The Brookstone store, with its broken, sculptural shapes, exposed ceiling and hand-ground terrazzo floor, has approximately 150 color-changing LED lights. "This is the next generation of lighting," predicts Mansour. "It was one of the ways of calling attention to the store. We've used it to frame the products in changing colors."

The Brookstone logo that is part of the store's entrance marquee is backlit by strips fitted with the LED lamps behind acrylic panels. The color of the band changes constantly from blue to violet to orange. Customers' attention is drawn from the marquee into the interior of the store by a 12.5-foot tall column just inside the entry. It is uplit with four C-type fixtures, programmed to cross-fade at different speeds, and creates a full range of colors.

Brookstone's products are divided into four categories based on their areas of use: home, lawn, health, and auto. The displays for the four products are housed in a series of pivoting walls that have been framed in changing colors coded red for home, green for lawn, blue for health, and yellow for auto. The four display units—each with its own program—pulse with colored lights from these four different color palettes.

Since all the lamps have their own built-in microprocessors, each also has a series of switches that can be set to operate a variety of different programs. They can be set to change at different speeds, creating not only a multitude of colors but an assortment of shows—color washes, random color changes, cross fades, and strobes, varied by speed, direction, saturation—activated by various switch settings.

The lamps can also be programmed using input from theatrical dimming boards, personal computers, or controllers marketed by Color Kinetics. *Nayana Currimbhoy*

LED-based lighting frames the marquee (above left) and the product displays at Brookstone. Individually programmed with different colors, effects, and timing, the displays pulsate with color and energy.

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CIRCLE 52 ON INQUIRY CARD

Lighting Sets the Scale at a Vast Insurance Company Headquarters

by Nayana Currimbhoy

Lighting designer Steven Margulies, president of Cosentini Lighting Design of New York City, knew that the 43,000-square foot-plus floors of the Blue Cross Blue Shield of Illinois headquarters were going to seem overwhelmingly large. "To deal with such huge floorplates, we thought it wise to begin with a module that was slightly larger than usual," says Margulies, explaining why a five-foot-square space-planning module was chosen, rather than the more common four-foot-by-four-foot grid. Responding to the large area, he designed a custom, five-foot-by-one-foot recessed fluorescent troffer especially for this application. It uses a hybrid louver assembly that combines white-finished rails with brush-finished aluminum cross-blades. The effect of the louver is to increase the apparent brightness in the space by eliminating the dark rectangular "black holes" that appear on the ceiling when conventional all-anodized aluminum louvers are used. Margulies explains that in addition to helping deal with the scale of the building, the five-foot module allows space-planning changes to be made with fewer fixture relocations and other disruptions than would be required with a smaller grid.

The front of the 1.3 million-square-foot built-to-suit office building is distinguished by a series of U-shaped atria along its front elevation. The atria, built on every fourth floor, were conceived to bring daylight deeper into the interior and to create lounge areas at regular intervals. At night, fluorescent tube lights and metal-halide downlights punctuate each atrium and create a vertical pattern on the front of the building that helps it stand out on Chicago's night skyline. In addition, color-changing floods backlight columns at the roofline.

The building's interior designers, VOA Associates, provided an upscale executive floor designed to showcase a collection of Shaker furniture that belongs to the corporation's chief executive officer, Raymond McCaskey. Just off the elevator, the visitor is greeted by a sloping stone wall that signals a change in sensibility, from modern to rustic. An old stone barn, for example, with large wooden roof beams was relocated and now serves as a conference room. Fireplaces, slate floors, and wood used

Project: *Blue Cross Blue Shield of Illinois Headquarters, Chicago*
Architect: *Lohan Associates*
Interior designer: *VOA Associates*
Lighting designer: *Cosentini Lighting Design—Steve Margulies, president and project lighting designer*
Electrical engineer: *Cosentini Associates*
General contractor: *Walsh of Illinois*

The Blue Cross Blue Shield of Illinois headquarters (above) has atria located on every fourth floor. These are illuminated by fluorescent uplights. MR-16s built into the canopy structure light the building's entry.

On an upper executive floor (left and opposite), where Shaker furniture is displayed, finishes are less formal. Indirect, incandescent light was used to mimic lanterns. Track lighting in ceiling slots gives the reception desk (below) a glow.

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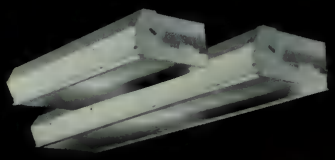

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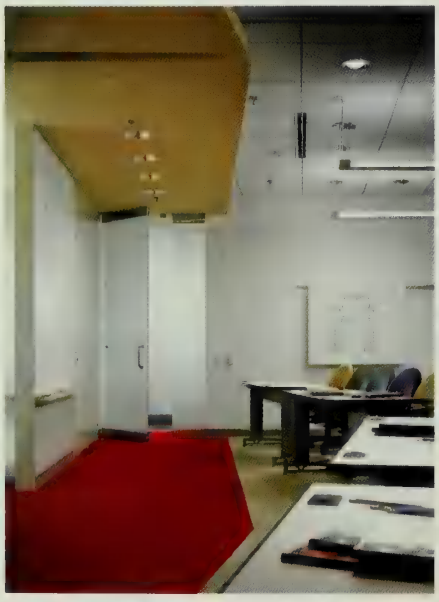
Lighting in the conference center requires flexibility, so dimmable compact-fluorescent wallwashers, pendant-mounted T8s, and fluorescent downlights were used.



throughout the floor extend the metaphor.

"Since the Shakers used candles and lanterns, the challenge was to integrate lighting as subtly as possible into the architectural design," says Margulies. Using, for the most part, indirect light sources, the executive floor's incandescent luminaires are concealed in coves and discreet light troughs. MR-16 spots draw attention to the numerous works of art, while executive offices are lit with a combination of T8 strip lights and PAR-38 fixtures. "Our intention was to keep it from looking like a museum," says Margulies. The angled stone wall is highlighted with halogen wall washers, and the executive boardroom is illuminated with a combination of MR-16 downlights, halogen wallwashers, and 13-watt compact fluorescents.

Fifty thousand square feet of below-ground conference areas are used for meetings and educational purposes. Here, the flexibility needed for all the activities that take place in the meeting rooms—audio-visual presentations, face-to-face learning, and video conferencing—is provided by a combination of dimmable compact-fluorescent wallwashers for chalkboards. Pendant-mounted T8 fluorescents and dimmable, incandescent PAR-38 downlights were used over the classroom seating. Outside the meeting rooms, the decor departs from the neutral colors and finishes typical of the office floors, and lounge areas have been outfitted in bright furnishings. Curved hallway walls are outlined by compact-fluorescent cove strips for straight runs and concealed cold-cathode sources where coves curve. Over the lounge areas, wood walls are washed by tungsten halogen lamps mounted on pendants. ■

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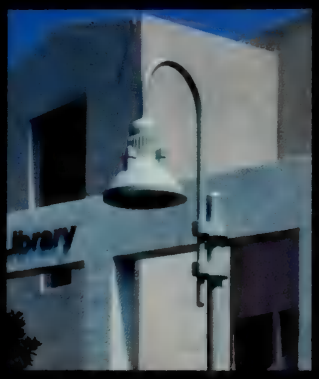

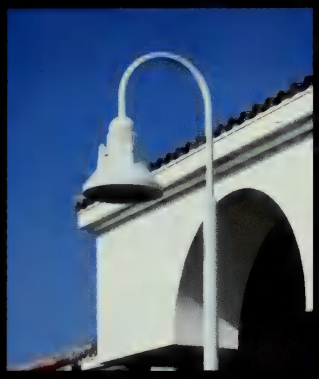

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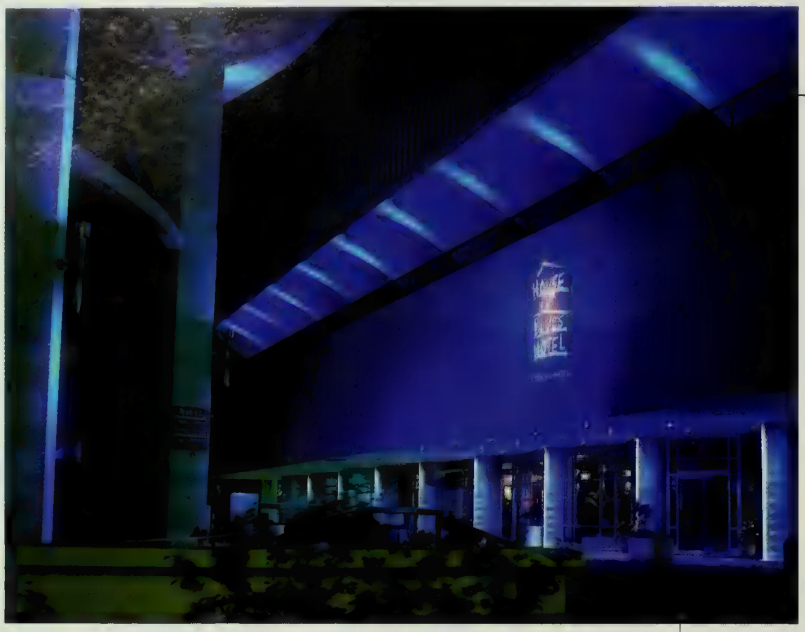
House of Blues Hotel a Harmonious Spot in Revived Marina City Complex



by Nayana Currimbhoy

The vision of the House of Blues' founder, Isaac Tigrett, is reflected in the company's mission statement, which says it should promote racial and spiritual harmony through love, truth, righteousness, and nonviolence and celebrate the diversity and brotherhood of world unity. The enterprise even has a red heart in its logo. The restaurant and nightclub chain's first hotel, built in the recently revived Marina City complex in Chicago and designed by the Beverly Hills-based firm, Cheryl Rowley Interior Design, reflects Tigrett's ideals with artifacts from cultures all over the globe.

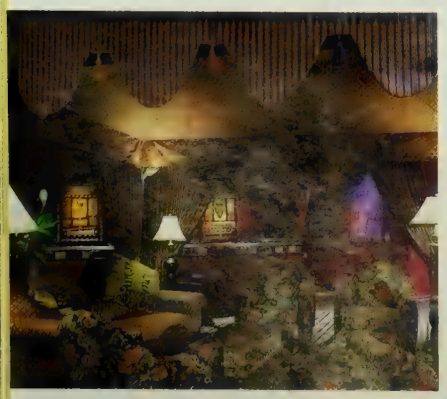
To affect the melding of influences, different kinds of art are displayed: a golden Burmese Buddha is enshrined with glass panels from a temple in India; 100-year-old Indian pillars line the reception area; Gothic wrought-iron cathedral gates lead to the lobby; Moroccan-type tents house meeting alcoves, and original Southern folk art is displayed throughout the lobby and in the guest suites. Farther along, visitors encounter more original artwork, ranging from 12-foot-high sculptures to Eastern-inspired stencil patterns and pictures made of mud and molasses.

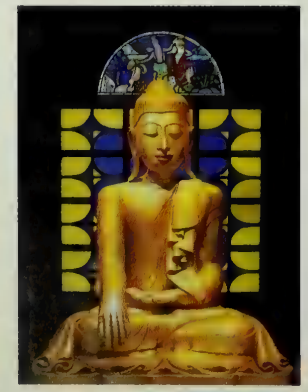
"The guiding principle is authenticity. The Buddha is not plastic; it is a genuine teak" says Michael Hooker, of MSH Visual Planners of Berkeley, the lighting designer for the 367-room hotel. Hooker's task was to achieve focus, balance, and cohesion within this eclectic environment. The challenge was to create interest from afar and maintain the comfort level of a hotel.

Hooker lit rooms and objects as if they were displays in a museum. For example, six MR16s sculpt the 125-year-old Buddha in three tones of amber, while two PAR36s highlight its face and hands. In the lobby, 12 stained-glass panels are illuminated from the rear with end-lit fiber optics. Different colors of light cross-fade over 15-minute intervals, deepening the color of the blue glass and transforming the yellow glass to red. "We chose end-lit fibers because they have a superior ability to direct beams of light with uniformity," says Hooker.

In the lobby, as well as up the stairs in the main bar area, are enclosed, tented spaces that create small-scale, intimate meeting areas. Fashioned after Moroccan tents, these enclosures are constructed of wrought-iron frames draped with imported fabric. Decorative sconces with 75-watt halogen lamps provide functional illumination within the "tents." The combination of fabric tones and dimming results in a very warm 2,300 Kelvin glow within the tent. Contrasted with the very cool lavender and blue tones of lighting elsewhere in the lobby and bar, the tents beckon as cozy alcoves.

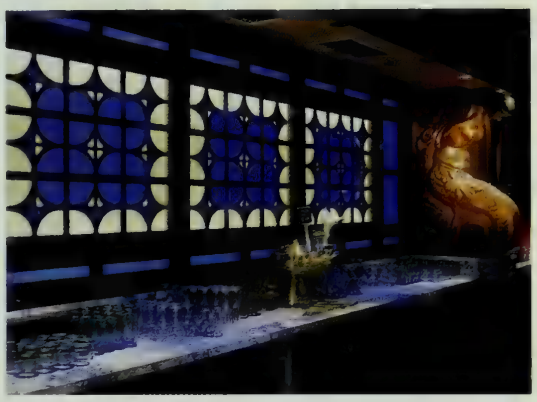
Four colossal statues dominate the center of the lobby. The 12-foot-tall figures, created by master stonecutter Walter Arnold, were inspired by ancient East Indian limestone sculptures. Recessed MR16s with linear-spread lenses illuminate the faces and chests of the figures,





Project: *House of Blues Hotel, Chicago*
Owners: *Marina City Redevelopment Corp., Chicago; House of Blues Inc., Hollywood*
Hotel operator: *Loews, New York City*
Project management: *Program Design Management*
Marina City complex architect: *Bertrand Goldberg Associates*
Hotel architect: *VOA Associates*
Hotel interior designer: *Cheryl Rowley Interior Design*
Lighting designer: *MSH Visual Planners—Michael Stewart Hooker, principal*
Contractors: *Power Construction (general), Gurtz Electric (electrical)*

The logo of the House of Blues Hotel is projected over the entry. Seventy-five watt sconces and torcheres light Moroccan-style tents (opposite, below left) used as cozy alcoves. A golden Buddha is grazed by light from amber-toned MR16s (opposite, below right). Four large limestone statues (left) are grazed by MR16 uplights and downlights. Gothic chandeliers hang over the registration counter (below left). PAR36s accent the sculptures at each end of the bar (below).



while MR16 uplights and downlights, fitted with color filters, tone the sides of each figure. MR16s illuminate the domed ceiling above, so that the sculptures become the focal point of the space.

The large blue and white marble bar, one flight above the lobby, came from Italy. Custom-designed Gothic chandeliers complement this ornate bar, while statues of a merman and mermaid that support a lighting valence over the bar recall the figureheads of ancient ships. "Although it is not visible, the wood below the bar is from church pews," says Hooker. The lighting in the bar area has been carefully composed to create a visual balance between these elements. PAR36 and MR16 uplights and downlights accent the antique mermaid and merman corbels. Two tones of blue accent the glassware, while a single MR16 fitted with a linear-spread lens highlights the center of the bar.

A projector fixture fitted with a 1,000-watt metal-halide lamp provides the entry signage for the hotel. A 6-volt, red incandescent, narrow spotlight beamed into the center represents the House of Blues logo, the red heart. The facade itself is washed by 150-watt and 35-watt metal-halide floods covered by glass filters in two different shades of blue. ■

Nayana Currimbhoy is a frequent contributor to the RECORD LIGHTING *section.*

Sources

Blue-glass porte cochere downlights: *Contrast*
Blue metal-halide porte cochere accent lights: *Kurt Versen*
Metal-halide downlights and accent lights: *Prescolite*
Vault accent lights: *Hubbell Lighting*
Vault wash lights: *Special FX Lighting*
Color filters: *Abrisie Industrial Glass; Lighting Services*
Hotel sign projector: *Phoenix*
Background wash and spot lights: *Altman Stage Lighting*

Hotel Lobby:
Recessed accent lights and downlights: *Kurt Versen*
Telemone statue ceiling-cove lights: *Specialty Lighting*
Telemone statue accent uplights: *Hydrel*
Telemone statue accent downlights: *Prescolite*
Tent indirect sconces: *Bega*
Fiber optics for stained glass: *Glass Illuminations*
Lighting controls: *Leviton*

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CIRCLE 55 ON INQUIRY CARD

Lighting Plan Sparks Improvements in Campus Circulation and Security

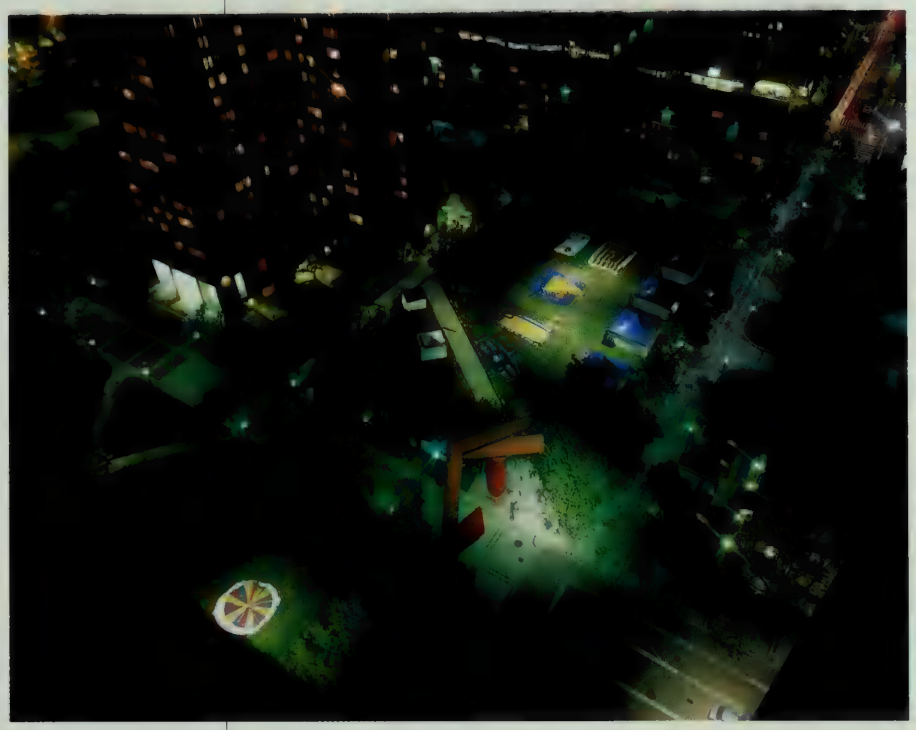
by William Weathersby Jr.

With roots dating back to a college founded in 1744 by Benjamin Franklin, the University of Pennsylvania occupies a 262-acre, tree-shaded campus just outside the center of Philadelphia. This Ivy League enclave in the inner city consists of a complex landscape of historic buildings and modern structures, which serve 20,000 students in 16 schools. Recently, university administrators commissioned Grenald Waldron Associates (GWA) to develop a comprehensive exterior lighting program that would help unify the appearance of the campus and adapt to its future growth.

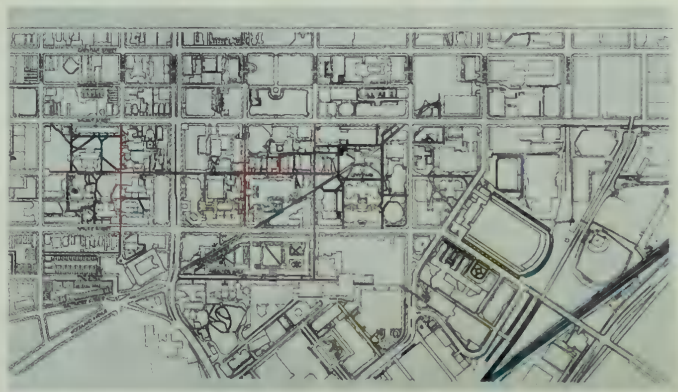
"The wide range of architectural styles on campus visually disappeared at night," observes GWA senior lighting designer Courtney Sarge. "Our initial intent was to concentrate on lighting the historic buildings along the campus perimeter to increase their presence within the community."

After a series of violent assaults occurred on campus during the project's early planning stages, however, "the thrust of the assignment turned toward improving nighttime security," says GWA chairman Raymond Grenald, FAIA. "We were also asked to develop a standard lighting vocabulary of fixtures and lamps that could be implemented campuswide to improve energy and maintenance costs."

Working with university architects and facilities managers, the lighting team evaluated every component of the existing illumination program. "The campus lighting had all the aesthetic charm of a prison

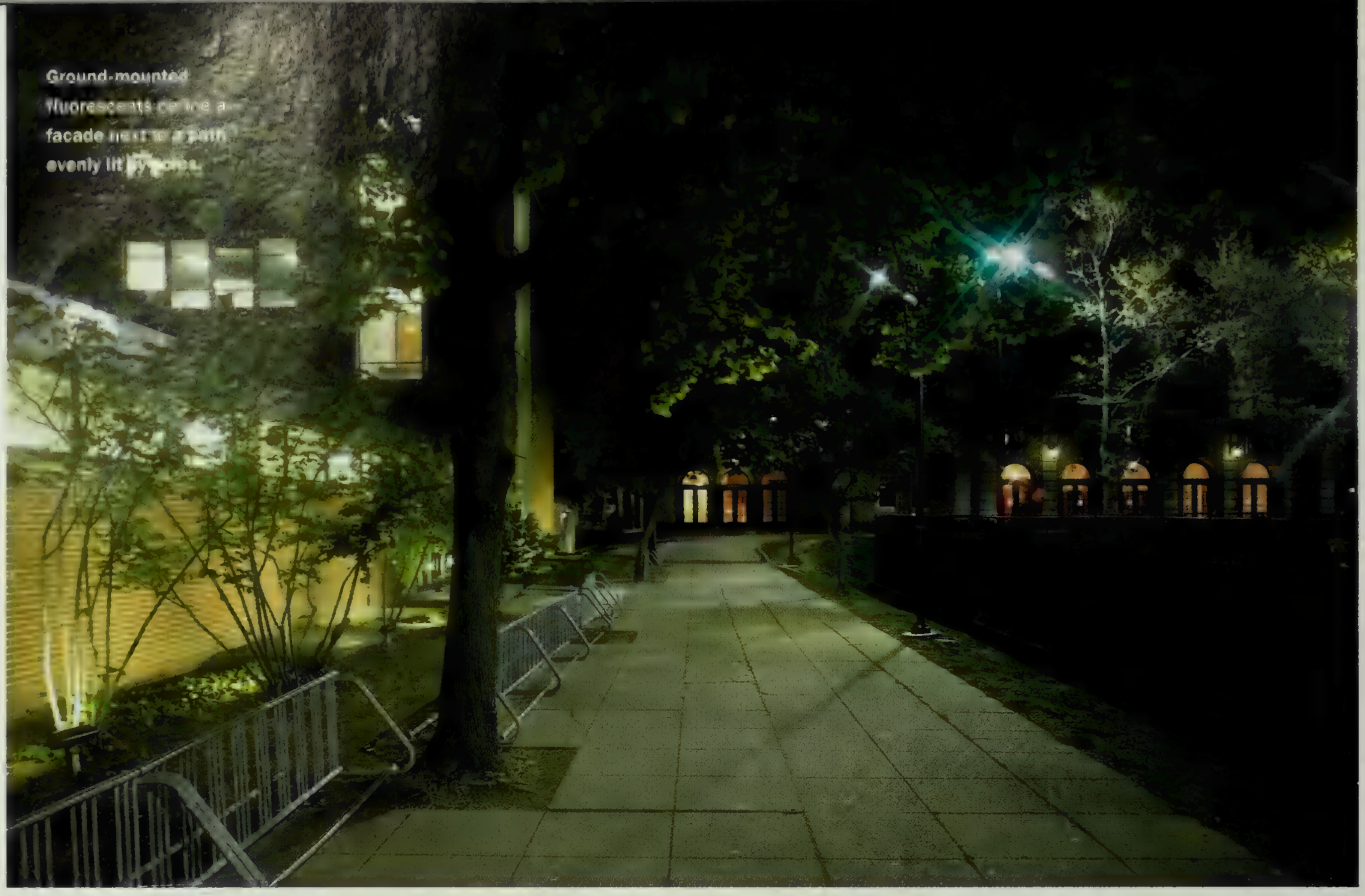


Project: *Campus Lighting Master Plan, University of Pennsylvania, Philadelphia*
Owner's representatives: *Dr. Judith Rodin, president; John Fry, executive vice president*
Lighting designer: *Grenald Waldron Associates; Rayman Grenald, FAIA, chairman; Sandra Stashik, principal; Courtney Sarge, senior lighting designer*
Electrical contractor: *Riggs Distler & Company*
Consultants: *Mulhern Consulting Engineers; Kease & Hood Company (structural)*
University facilities services: *Arthur Gravina, vice president, facilities management; Titus Hewryk, university architect; Anne Froehling, landscape architect; Robert Lundgren, university landscape architect; Charles Boyle, chief electrical engineer; Dominick Fantozzi, project manager*



Primary pathways
Secondary pathways
Tertiary pathways
Special area

The campus' new exterior lighting includes integrated layers of light for paths, facades, and landscaping (plan and above) and clearly marks walkways and building entries. Also, supplemental illumination eliminates dark zones around shrubs and sculptures.



Ground-mounted fluorescents define a facade next to a path evenly lit by poles.

Pole-mounted metal halides light the facades of a church and the campus police station (middle). In the street-level arcade of Franklin Field (right), metal-halide uplights mounted atop archways provide indirect pathway illumination.

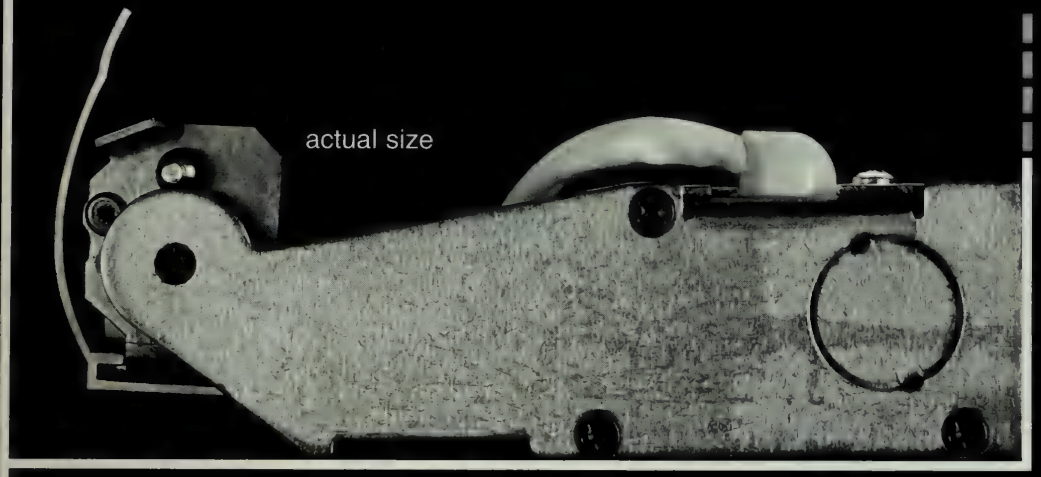
yard," says Grenald. "There was an overall grid of light, but the fixtures were very bright and glaring. The response to security issues had always been to create brighter levels with floodlights along pathways and entrances, which put pedestrians on stage and made them feel even more exposed than in less light."

The revised master plan incorporates complementary layers of light that enhance building facades, landscaping, and pathways to "express the campus as a unified entity," as design principal Sandra Stashik puts it. "Not only are facades and pathways clearly defined," she adds, "but each zone that pedestrians move through has a clearly demarcated scale and range of navigation options."

Pathway lighting is the linchpin of the new plan. A hierarchy of nighttime campus circulation routes was established, with primary and secondary walkways then illuminated in different ways. Owing to the juxtapositions of campus buildings, utilities, and other obstructions, many pole and luminaire locations required adjustment in the field.

THE NEW LIGHTING ENHANCES FACADES, LANDSCAPING, AND PATHS.

The existing plan had placed the majority of pole-mounted metal-halide lamps along major promenades. As a budget consideration, GWA decided to modify rather than replace these luminaires, commissioning a local fabricator to extend the aluminum poles by 2.5 feet. Yellowed polycarbonate globes were replaced with new acrylic models, new ballasts were fitted, and the metal-halide lamping was adjusted from 175 to 100 watts. The taller height of the fixtures help reduce glare, while placement of the lampposts in paired runs, as opposed to their previous staggered formation, distribute light more



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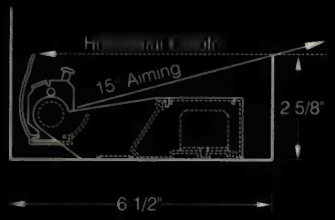

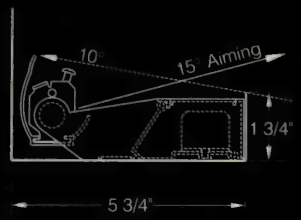

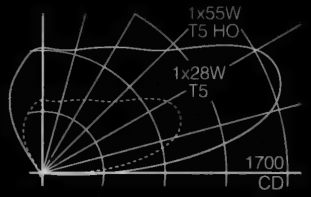

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CIRCLE 56 ON INQUIRY CARD

A prominent sculpture titled "The Covenant" is spotlit by 1,000-watt metal halides mounted atop adjoining high-rise dormitories. To the right of the sculpture, metal-halide luminaires featuring cut-off fittings light a tertiary pathway without creating excessive glare.

widely. Lamp wattage along secondary pathways was reduced from 175 to 150 watts, while specifications for 15,000-hour lamps trimmed operating costs.

On tertiary walkways, the lighting designers specified cut-off luminaires supported by shorter bishop's-crook-style poles. "The major paths are clearly marked yet distinguishable from the secondary walkways," Stashik says. "The lines of illuminated globes allow you to distinguish major axes, while the secondary routes are well lit without creating confusion."

To imbue pedestrians with a strong sense of security at night, the designers enhanced orientation by illuminating architectural landmarks at the terminus of each path. "Floodlighting the major buildings became crucial," says Grenald, a former urban planner, "since pedestrians generally prefer not to walk toward areas of darkness."

With two-thirds of the master plan implemented, approximately 15 university buildings feature upgraded illumination. "The light tends to come from one direction to graze a facade and cast shadows that express the architectural detailing," Grenald says. Adds Stashik, "We aimed for a moonglow quality that outlines buildings on the horizon, not Times Square-style floodlighting."

The buildings are primarily lit with metal-halide lamps and high-pressure sodium fixtures mounted on the rooftops of nearby buildings or on poles across the street. Entryways and the lower levels of buildings are lit by ground-mounted compact fluorescents, with historic lanterns restored and converted to lower-wattage compact fluorescents.

Landscape elements, such as shrubbery, trees, and outdoor sculptures, were treated as a connective layer of illumination between buildings and circulation corridors. "The practice had been to cut down obstructions like hedges or shrubs as security precautions," Sarge says. "Now that they are uplit, they are perceived as a nighttime enhancement instead of as a threatening shield for potential assailants." ■

Sources

Primary and secondary walkway lighting: *Street Lighting Equipment*

Tertiary walkway lighting: *Architectural Area Lighting*

Pole- and building-mounted floodlighting: *Sterner*

Ground-mounted fluorescents: *Omegalux; Forum*

Tree lighting: *Sterner*

Entry lighting: *McPhilben*

Lantern restoration: *Klemm Reflector*

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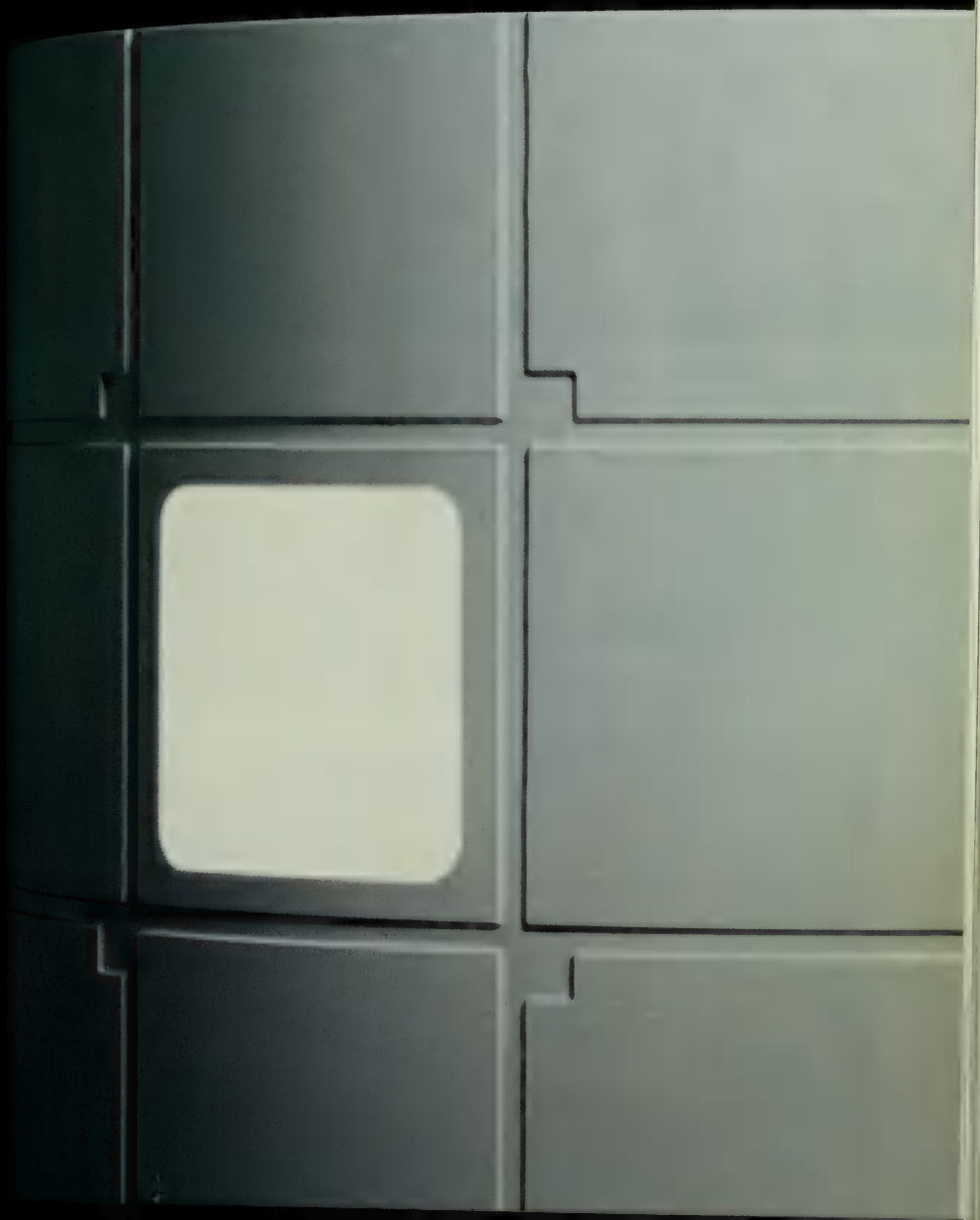

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CIRCLE 57 ON INQUIRY CARD

A Design Team Whips Up An Egg-Shaped Showroom

by William Weathersby Jr.

Which came first, the egg or the rectangular copier? The egg, of course. So, it seems only natural that Xerox Corporation's New York City product showroom took the timeless ovoid form as its central architectural element—it contrasts well with the right-angled geometries of the business machines on display. Besides, "The client requested a signature feature that would function like a corporate billboard attracting passersby," says Highland Associates project architect Glenn Leitch, AIA. "The showroom's ground-floor location," he adds, "presented an extraordinary opportunity to enhance the company's brand-building efforts through the design of its interior architecture."

Dubbed "the Egg" by the project design team, the structure organizes circulation patterns through the 20,000-square-foot space while serving as an icon visible from Park Avenue at 47th Street.

Collaborating on this architecture-meets-marketing formula were lighting consultant Ann Kale Associates and graphic and interactive display designer IDEO. "The showroom required a dramatic entry area coupled with a series of more straightforward product demonstration suites," says designer Ann Kale. "The Egg smoothes the transition between the two zones, and its eye-catching integral lighting helps extend the Xerox corporate presence beyond the envelope of the generic office building's slab-to-deck glazing."

The Egg is 16 feet high and 35 feet long, with an outer surface of curved-glass panels laminated with translucent graphics. PAR16 tungsten-halogen lamps, hidden inside a nine-inch-deep cavity between the glass and a gypsum-board inner wall, backlight the graphics. "We explored using fluorescents to illuminate the panels like a lightbox, but it would have been difficult to replace them. We decided to restrict lamp positioning to the top and bottom of the wall to facilitate maintenance," Leitch says.

The PAR16 lamps are spaced six inches on center between the top and bottom of the wall. "The lamps were chosen for their consistent color and small size and because they don't require heat-sensitive transformers, like low-voltage systems do," Kale says. "The PAR16s are also bright enough to be visible when the sun comes through the adjacent west windows."

Where the Egg curves away from the entry, a series of interactive kiosks, video monitors, and graphic panels support product education and brand imaging. "Since many of the display monitors are self-illuminated, the space did not require much additional light," Kale says. "The intent was to always draw the visitors' eyes back toward the luminous Egg as they move through the space."

Deeper into the showroom, beyond the curve of the Egg, are six product-demonstration suites separated by gypsum-board partitions, which had to be built around the floorplate's existing column grid. Typical two-by-two-foot recessed parabolic fluorescent troffers that simulate ordinary office lighting were used here. Wall-mounted supergraphics and product information are highlighted by MR16 track fixtures recessed into ceiling slots.

In addition to the showroom, the team designed regional offices for Xerox on three of the upper floors. The contiguous levels, each 35,000 square feet, converge at a circular central atrium. Two steel stair runs swoop dramatically in front of a 34-foot-high Xerox's "X" logo, in red-lacquered relief, set into anigre—an African hardwood—veneer panels. Track-mounted PAR38 tungsten halogen lamps, spaced nine inches on center, were installed around the perimeter of the space and vertically wash the veneer. Fluorescents illuminating adjacent offices have an average power density of less than 1.7 watts per square foot. ■

William Weathersby Jr.'s latest book, The Pierre: The Life and Times of a Grand Hotel, *will be published this winter.*

Project: *Xerox Corporate Showroom, New York City*
Architect and engineer: *Highland Associates—Glenn Leitch, project architect*
Lighting designer: *Ann Kale Associates—Ann Kale, principal; Davis Mackiernan, senior associate*

Sources
Downlights, wallwashers, accent lights: *Edison Price Lighting, Zumtobel*
Additional fluorescents: *C.J. Lighting, Metalux, Neo Ray.*
Sconces: *Hampstead*
Uplights: *Norbert Belfer Lighting.*

A large-scale glowing ovoid projects a strong streetside presence for the Xerox showroom (opposite). With only six inches of clearance between the staircases and the wall, illumination is provided by a continuous line of track-mounted PAR38 fixtures (left). Many business machines have self-illuminated screens and thus do not require high levels of light in the demonstration suites (below). The suites are lit with standard office two-by-two-foot recessed parabolic fluorescents. Displays and supergraphics are illuminated by MR16 track fixtures that are recessed into slots in the ceiling.

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CIRCLE 50 ON INQUIRY CARD

Adam Tihany Turns Stylist for A Pair of Fiber-Optic Fixtures

by Charles Linn, AIA

Adam Tihany has turned his talents to the design of a pair of new fiber-optic fixtures for Lucifer Lighting of Austin, Tex. Though best known for his interior design [see September 1999, page 140], Tihany has been involved in product design since his student days in Milan. "That's how I paid my way through school," he says, "most architects at the time were involved in furniture and products because there was no construction going on."

The new designs are called the Scape Light (right) and Light Chime (far right). The designs represent a leap in the evolution of fiber-optic technology: Tihany is the first designer with an international reputation to style fiber-optic lighting products for the architectural lighting market. Until now, that role has been relegated to industrial engineers and technicians.

Like electric lighting, fiber-optic lighting uses a lamp as a light source. Instead of the lamp being the terminating point of the system, however, it is the midpoint. The light is conducted over a cable, which may be a bundle of hairlike strands or a single strand the diameter of a wooden dowel. The cable can be glass or plastic and is not electrified. It may be unsheathed, emitting light along its length so that it looks like a neon tube, or sheathed, so that light shines only from its end. The advantages are obvious: fiber-optic cable can be run where wiring could present a serious hazard if damaged—such as underwater—and where replacing lamps would be difficult. The cable does not conduct heat from the lamp, so the light emitted is cool, and one lamp can illuminate many fixtures.

FIBER-OPTIC CABLE CAN BE RUN WHERE WIRING COULD BE A SERIOUS HAZARD.

In the 1980s, two innovations made fiber-optic lighting practical for widespread use. The first was the introduction of a new generation of metal-halide lamps. They were compact, produced more lumens per watt, operated at cooler temperatures than comparable incandescent sources, and had excellent color-rendering properties. Metal-halide lamps were built into illuminator boxes that were extremely efficient at focusing light into the ends of the fiber-optic cables. The second innovation was the introduction of relatively inexpensive fiber-optic cable that was much better at conducting light than the cable that had been previously available. Distribution of light at the light-emitting end of the cable was also improved with the development of systems that spread the light out once it reaches the end of the cable.

Still, advances in product design have lagged with regard to the light-emitting end of fiber-optic systems. While dozens of fixtures have been developed, most seem to mimic the design of small downlights and other incandescent fixtures. This situation is typical in the evolution of product design—early light fixtures, for example, resembled the gaslights that predated them—so it will likely take time for designs to make use of the unique advantages of optical fibers.

Delivering on these advantages is the Light Chime (illustrated in the photo below), whose translucent cones are tough acrylic and in which 18 of the fixtures swing freely from the branches of a tree. Not only would it have been difficult to relamp the fixtures if each had had its own individual bulb, but also mounting the wiring and junction boxes needed for so many circuits would have required more effort than installing the fiber-optic cables. The potential for weather damage is another drawback to tree-mounted electrical wiring; a storm can break live wires, leaving them where they could cause injury or damage.

Tihany is not finished innovating for Lucifer. In discussing plans for the Scape Beam, he says, "We are creating a number of accessories that will give this single shape many uses—on a wall or attached to a tree. I can't wait to design an entire environment around it." ■

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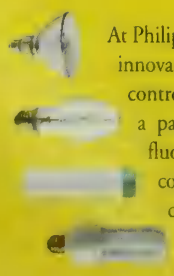

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CIRCLE 59 ON INQUIRY CARD

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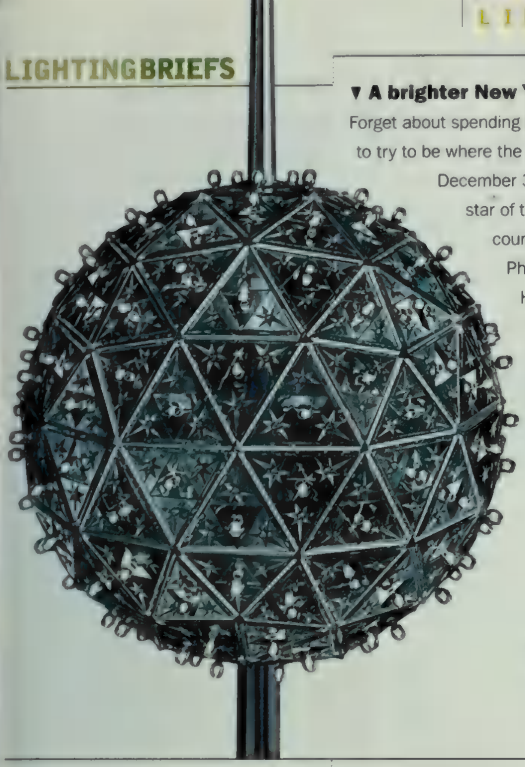

▼ A brighter New Year

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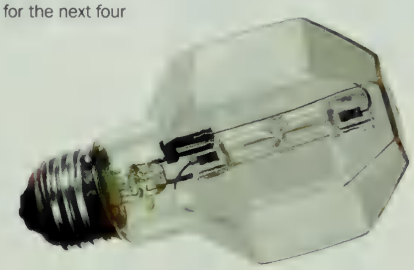
CIRCLE 200



▲ Jack light system

Milled from solid aluminum billets, Tracer, from Spy Lighting Corporation, features a jack light system shown here with concealed power supply. Standard finishes for Tracer include black, white, sand gray, and brush aluminum. The lamp is a 50-watt MR16 halogen. 716/691-7558. Spy Lighting Corp., Amherst, N.Y.

CIRCLE 204

▲ American blown-glass lights

2thousand degrees has added the Majorica pendant and sconce to its line of blown-glass light fixtures. The fixtures are available in seven frosted-glass colors and satin nickel, satin brown, and satin gold finishes. The pieces feature a blown-glass shade with an optic pattern, satin-plated shade holder and canopy, and a 50-inch adjustable black cord. All 2thousand degree lighting is made in Northern California. 510/234-6886. 2thousand degrees, Richmond, Calif.

CIRCLE 201

► Lighting to grow on

A companion to Biproduct's line of stacking furniture is a pair of stacking table and floor lights. The floor light (shown) features a system of stackable rings available in natural and colored aluminum. Additional rings may be purchased or custom ordered. The stacking floor light is 5 by 5 by 48 inches and is made of waxed aluminum, powder-coated aluminum, and a stainless-steel mesh. The light requires a 50-watt PAR20 halogen bulb. All lighting fixtures are UL-listed and manufactured in the U.S. 212/255-3033. Biproduct, New York City.

CIRCLE 202

◄ Paperlike pendants

The ParkerPaper technique looks like crumpled and folded paper but is actually made of reinforced cement. Lights are available in sconce and pendant form. The Hastings light disc (shown) is designed to hang below recessed lighting to deflect light up and block downward glare. Cables can be adjusted to any length to a maximum of 24 inches. While facets on the surface give the work a sculptural interest, the material is lightweight, flame resistant, and easily cleaned. 510/845-6187. ParkerPaper, Emeryville, Calif. **CIRCLE 203**

▲ Cone-shaped sconce

The d1140 Portsmouth wall sconce provides softly diffused ambient lighting and an industrial appearance, for a range of residential and contract interior lighting applications, including corporate interiors, public spaces, and hospitality venues. Fixtures feature a perforated half-cylinder metal ballast compartment with an inverted cone-shaped lens. 914/698-5959. d'ac Lighting Group Inc., Mamaroneck, N.Y.

CIRCLE 205

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CIRCLE 61 ON INQUIRY CARD

LIGHTING BRIEFS

◄ Working floor lamp

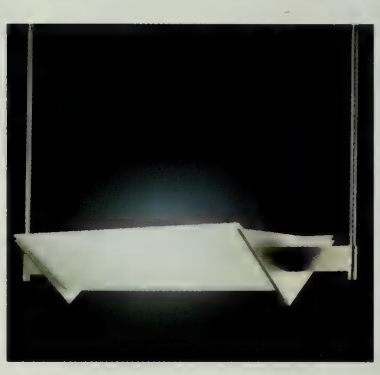
The KIT P-1225 is part of the new collection of wall sconces, ceiling fixtures, pendant fixtures, and desk and floor lamps from Spanish manufacturer Estiluz. Made by joining a halogen floor lamp to a glass table attachment, the lamp provides direct and indirect light and features an electronic dimmer and a double-intensity low-voltage switch. Finishes include satin gold, gold plate, nickel and black. 201/641-1997. Estiluz Inc., Little Ferry, N.J.

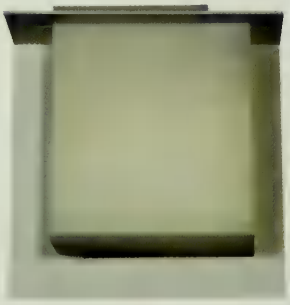
CIRCLE 206

► Another viewpont

The Viewpoint indirect/direct lighting system is available in an array of glass and metal finishes, such as wire glass, speckled glass, satin aluminum, and acrylic. Available in both pendants and sconces, Viewpoint is practical for commercial applications. 212/371-4800. The American Glass Light Company, New York City.

CIRCLE 207





▲ The Meier Lisa

The Lisa Wall Sconce, from Baldinger's Richard Meier collection, is designed to provide a soft diffused light. The white acrylic and frosted, ribbed acrylic diffuser options allow the fixture to produce a glowing effect while providing even illumination. The fully lined perforated metal lids on the top and bottom of the sconce make it appropriate for many spaces, including stairwell and corridor applications. The durable powder-coated metal-finish options include painted gloss white, painted copper, and painted silver. 718/204-5700. Baldinger Architectural Lighting, Astoria, N.Y.

CIRCLE 208

▼ Orbital projector lights

The Mondial F-1 is an orbital projector light grouped in an architectural "space frame." Appropriate for high-end retail, hospitality, or museum projects, Mondial offers horizontally and vertically aimable, fully orbital projector lights, in a modular steel space frame that attaches to the architectural planes of the space being illuminated. Mondial projection lights may be specified in four- and eight-inch lens diameters. Projectors are available in an aluminum gray finish. 888/578-8111. Targetti USA, LLC, Santa Ana, Calif.

CIRCLE 209

For more information, circle item numbers on Reader Service Card

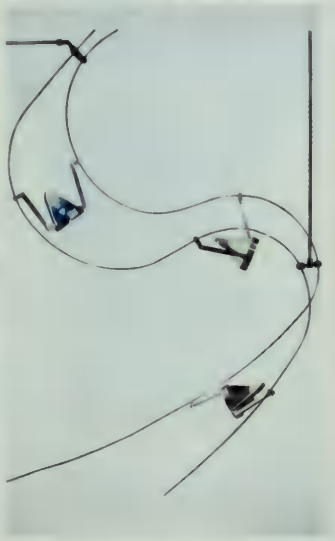
LIGHTINGBRIEFS

▲ Mission-style mica

All Mica Lamp parts are made of solid copper, assembled with hand-driven copper rivets, and finished with natural patina. Mineral mica flakes, combined with organic shellac, give each mica shade a variation of mineral deposit patterns and color tones. All wood-based lamps are made of solid white oak. Shown here are the Bungalow table and floor lamps. 818/241-7227. Mica Lamp Co., Glendale, Calif. **CIRCLE 211**

▼ Light art

Tech Lighting's low-voltage Radius Wire system features slim conductors that can be easily hand bent on-site into whimsical loops or graceful curves for a sculptural effect. RadiusWire's flexibility allows it to add artistic illumination to a number of residential, commercial, or retail settings. Shown below is RadiusWire accessorized with round glass shields in cobalt, amber, and red. 773/883-6110. Tech Lighting, Chicago. **CIRCLE 210**



▲ Scenic system on tour

UV/FX was able to create a completely invisible 28-by-60-foot backdrop for the Dave Matthews Band, in which a hidden image is completely invisible until lit with UV backlight. Under normal lighting, the backdrop appears as a Mondrian-style abstract cityscape painting. Under UV lighting, the same backdrop becomes a highly detailed painting of the Las Vegas strip in the 1960s. The system allows for UV-activated scenic images to be painted on lightweight scenic scrims that are resistant to crease lines and easy to set up. UV/FX effects scenery is currently on tour with The Offspring, Chicago, and Meatloaf. 310/392-6817. UV/FX, Santa Monica, Calif. **CIRCLE 212**

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CIRCLE 63 ON INQUIRY CARD

LIGHTING BRIEFS

▲ Along came a spider

The contemporary, large-scale, multilight-source design shared by Starfish and Spider pendants makes them ideal for reception areas, conference rooms, dining, and banquet rooms. Spider (shown) features thin brass fixture arms angled slightly upward from the body that curve down at the tips to join with the closed-end translucent cylindrical glass shades. Spider may also be specified with open-bottom shades, for direct downlighting. Starfish and Spider fixtures are UL- and CUL-listed. 914/698-7799. Nessen Lighting, Mamaroneck, N.Y.

CIRCLE 213

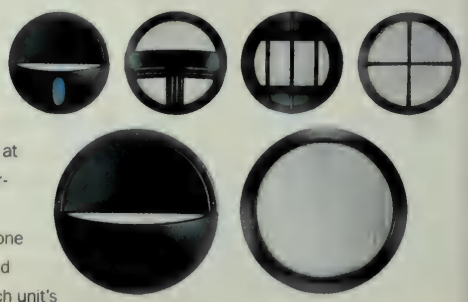
◄ Another light on Broadway

The Broadway wall sconce, designed by Doyle Crosby, is a more tailored version of Boyd's Duchess fixture, also designed by Crosby. Capped by a sloped fine linen shade, Broadway is offered in one-arm or two-arm versions. For contract installations, an ADA-compliant version is available using a half shade. Crosby has also designed the Mercury wall sconce. Mercury's architecturally inspired stem serves as the foundation for three design interpretations. 415/778-4300. Boyd Lighting Company, San Francisco.

CIRCLE 214

▼ Tough, die-cast luminaries

Fail-Safe introduces the Harmony series of decorative/complex-environment luminaires. Front and back housings are fashioned from extra-heavy aluminum, for efficient heat dissipation, and a five-stage paint finish, baked on at 400-degrees Fahrenheit, further protects each unit. A liquid injection-molded silicone gasket provides a water- and dust-tight seal between each unit's housing and front-lens assembly. 847/806-3885. Cooper Lighting, Elk Grove Village, Ill. CIRCLE 215



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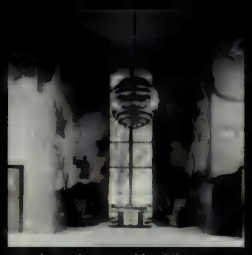
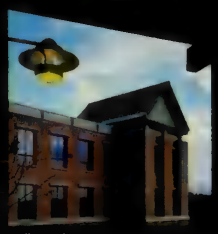
still going strong after all these years

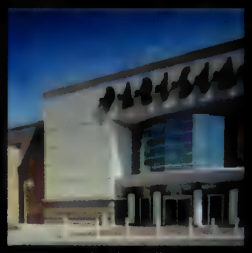


Danish Pavilion, World Exhibition, Paris 1925

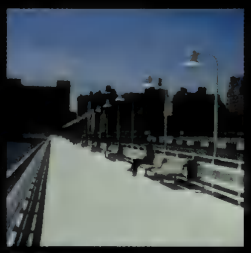
Orbiter, Albertslund, Denmark 1964



Duracell Headquarters, Connecticut 1995



Parisian, North Lake Mall, Georgia 1993



Proposal Holland Tunnel, New York 1996

Poulsen Lighting Headquarters, Fort Lauderdale, Florida 1996

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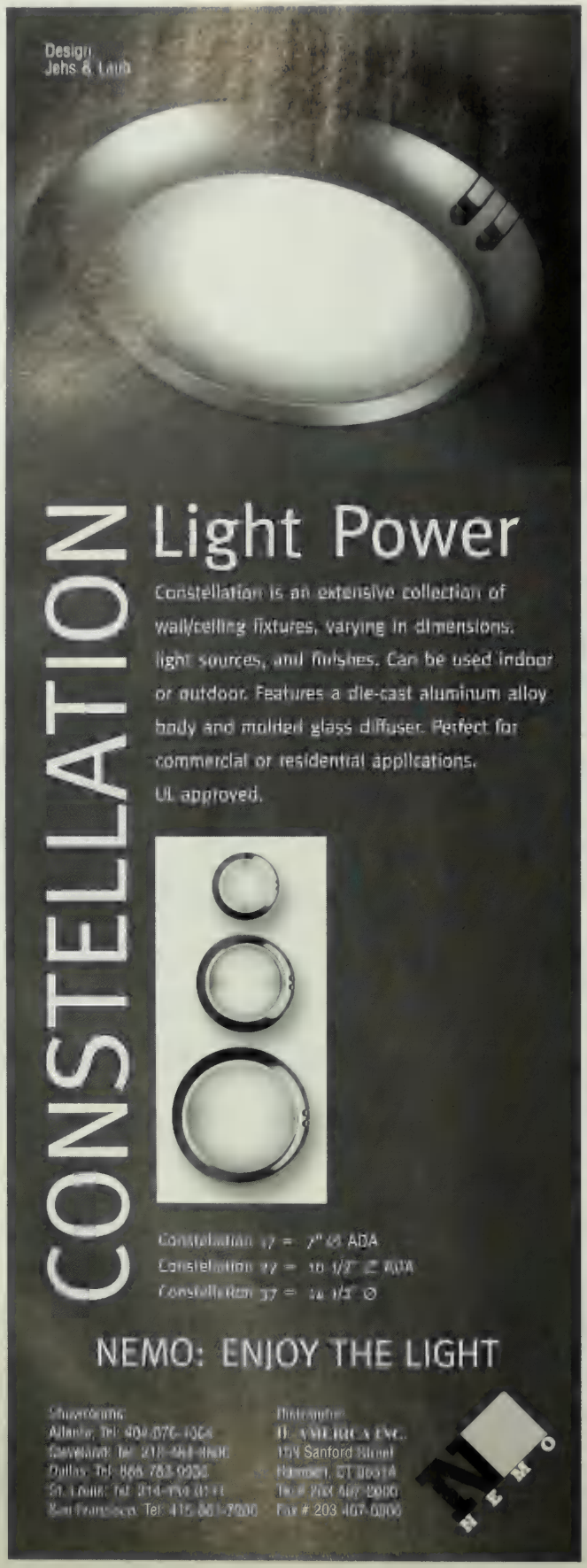
CIRCLE 64 ON INQUIRY CARD



CIRCLE 65 ON INQUIRY CARD

LIGHTING BRIEFS

► Steel and mica collaborate

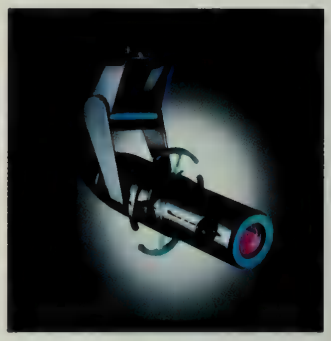
The Lineage collection, created by interior and product designer Clodagh, is unique for Boyd because of its use of steel as the base metal, its large scale, and its new diffusing materials. Available as a pendant or sconce, even the largest wall fixture is ADA compliant. The designs are offered in gossamer steel, blackened steel, satin steel, or antique bronze finishes with white, pearl, or amber mica diffusers. 415/778-4300. Boyd Lighting Company, San Francisco. **CIRCLE 216**

▲ Table lamp dimmer

The RadioRa dimmer provides one-touch tabletop operation of lamps. The user can brighten, dim, or turn on or off any lamp at the touch of a button. The control allows lamps to be incorporated into preset lighting scenes. 800/523-9466. Lutron Electronics Co. Inc., Coopersburg, Pa. **CIRCLE 218**

▼ Creating the right image

Designed for display environments, the new BP75 Image Projector Series features a drop in cartridge with the ability to project, focus, and align (up to 90 degrees) any combination of two Gobos (patterns), which can be either glass or metal. 800/999-9574. Lighting Services, Inc., Stony Point, N.Y. **CIRCLE 217**



▲ Good bedside manner

Derungs Lighting, a division of medical task lighting from Waldmann, introduces the Medicool E Bed Light and a complete line of medical task and inspection lighting. Medicool E is intended for both patient and staff use and is offered with an adjusting articulated or flexible gooseneck arm. 800/634-0007. Waldmann Lighting Co., Wheeling, Ill. **CIRCLE 219**

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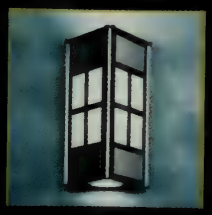

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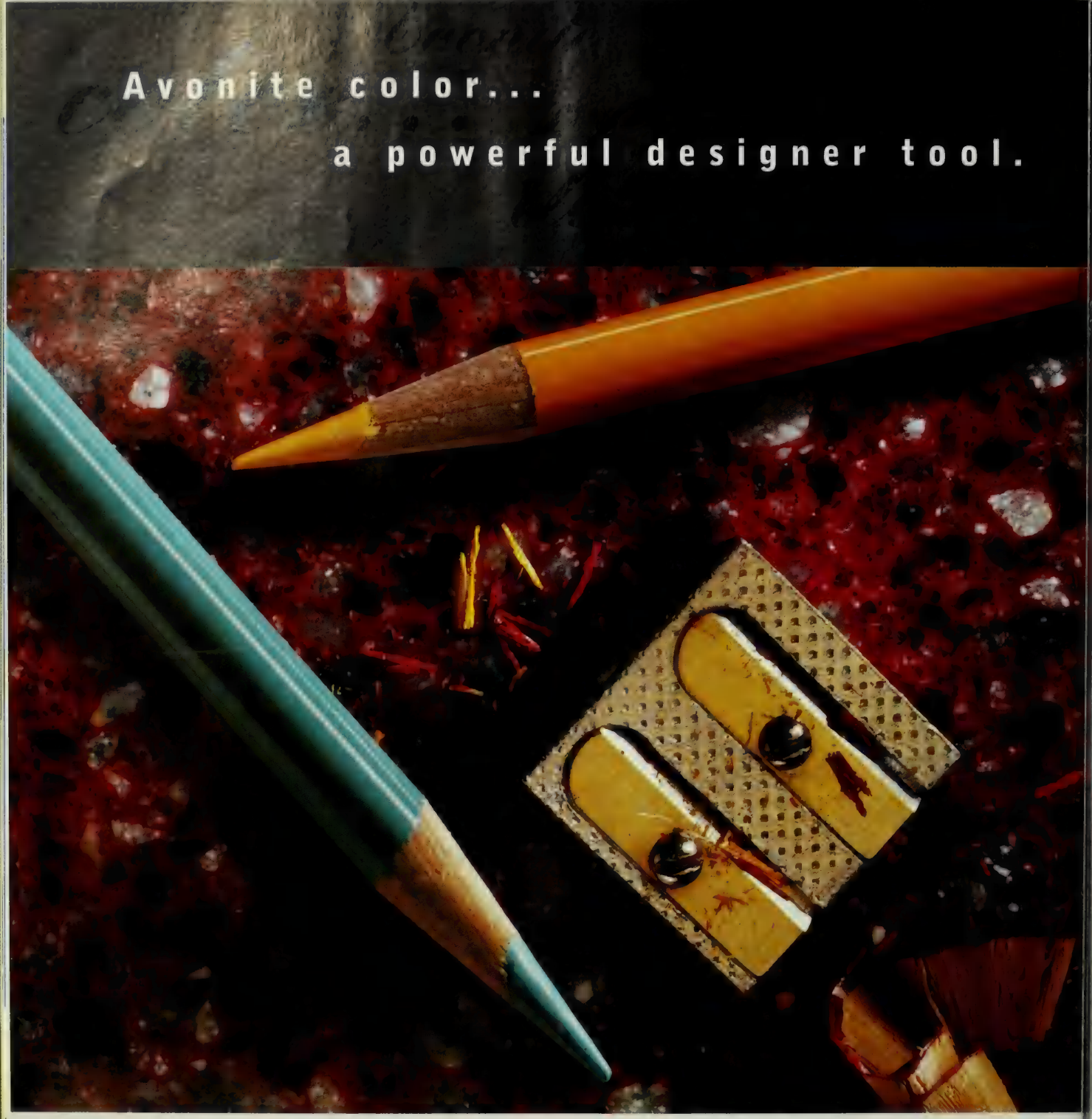

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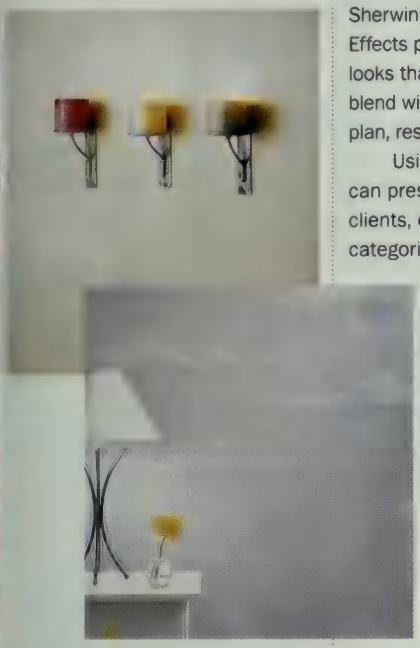
CIRCLE 67 ON INQUIRY CARD

NEW PRODUCTS

According to John Stauffer, director of the Paint Quality Institute, architects should try to spec high-quality paints, have surfaces primed to maximize adhesion of the finish coat, and insist on thorough surface preparation in renovation projects. Several trends in paints and finishes include the increase of water-based alternatives for all types of coatings, including primers, stains, varnishes, and new types of low-odor latex-based paints. Also, softer, more realistic looks are being created through faux finishes or decorative painting techniques that give a three-dimensional look. For a detailed look at paint formulas, check out this month's Technology article on page 131. ***Rita F. Catinella, Products Editor***

FAUX FINISHES HELP CUSTOMIZE COMMERCIAL OR RESIDENTIAL SPACES



Sherwin-Williams' illusions Paint Effects program offers faux-finish looks that can be customized to blend with any color and design plan, residential or commercial.

Using a color card, designers can present finishes and styles to clients, choosing from illusions categories such as sleek contemporary, touch of whimsy, European grandeur, and Americana. In addition to color cards, the program also includes all the essential base coats, glazes, tools, and supporting application information. 800/552-7579. The Sherwin-Williams Company, Cleveland.

CIRCLE 220

COLOR PALETTE IS FULL OF HISTORICAL CHARACTER

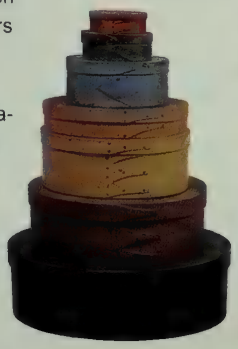
Historic Colors of America, available from California Products, were selected from hundreds of samples taken from historic buildings and painted objects ranging from folk carvings to elegant corner cupboards.

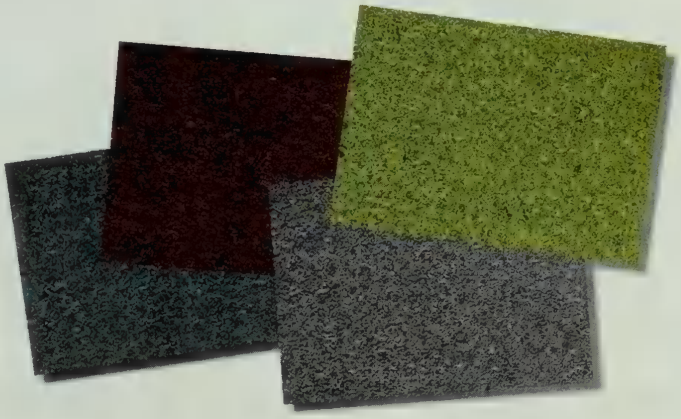
The palette includes both early earth pigments, like Farmhouse Ochre and Codman Claret, and the more brilliant colors that became available in the 18th and 19th centuries. All of the colors presented are historically accurate.

Trained conservators from the Society for the Preservation of New England Antiquities' Conservation Center have worked with museums and private homeowners from across the country to understand, preserve, and recreate the Historic Colors of America.

The conservators learned that interior colors of past eras were bold, and exterior colors were painted from a vivid palette in flamboyant combinations. 617/547-5300. California Products Corporation, Cambridge, Mass.

CIRCLE 221





TWO SPRAY-APPLIED FINISHES CREATE ILLUSIONS WITH LIGHT AND COLOR

A spray-applied, water-based commercial wall finish, Lluminations (above) from the Zolatone brand of Surface Protection Industries, is composed of highly reflective, natural colorants which, through a proprietary manufacturing process, are encapsulated and suspended in water to create a luminescent effect. Lluminations allows the specifier to choose deeper colors because of its greater light-reflectance values.

Lluminations is Class A Fire Rated; has a VOC of less than 60 grams per liter; shows no bacterial, mildew, or fungus growth; and resists stains such as catsup, butter, orange juice, motor oil, and acetic acid.

The finish can be applied to almost any substrate, including drywall or plaster; concrete, masonry or concrete block; wood surfaces; ceramic tile; fiberglass; glazed block; galvanized metals, aluminum; ferrous metals; and previously painted surfaces. The special coating material is applied using a two-step pressure-differential spray technique, with variable control to ensure uniform distribution and 100 percent full coat (continuous coverage).

Another finishing option available from Surface Protection Industries is the Polomyx Gallery III Series Colors interior multicolor wall finish. Also a spray-applied, commercial wall finish, Polomyx Gallery III is available in a range of 84 new colors and a new pattern design. Gallery III offers an optically solid color effect for creating special designs in rooms, corridors, and hallways. Polomyx is intended for several types of projects, including office, education, health-care, hospitality, and retail environments.

Polomyx can be applied over a broad variety of substrates, meets all state and federal environmental codes, and features a textured appearance that helps hide minor wall defects. 888/ZOLATONE. 800/POLOMYX. Surface Protection Industries International, Los Angeles, Calif. **CIRCLE 222**

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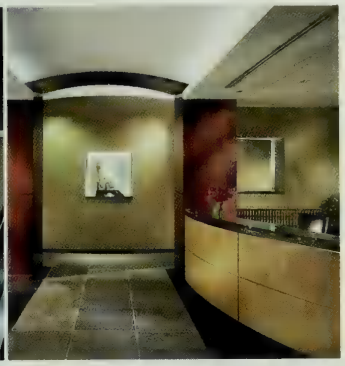
CIRCLE 68 ON INQUIRY CARD

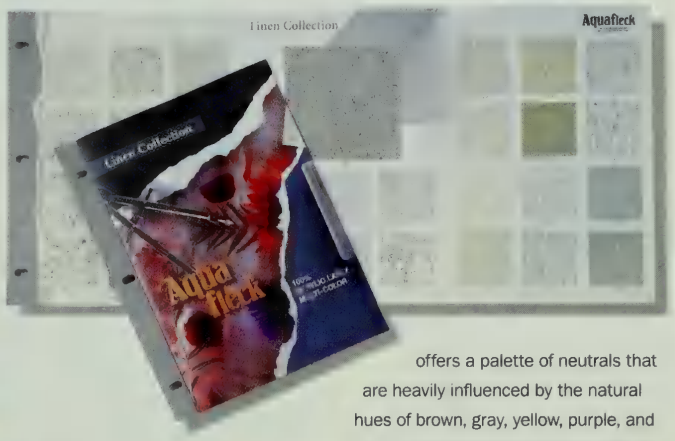
▲ Interior finish alternative
The USG decorative interior finish system offers a means of achieving the classic look of semismooth and textured integrally colored finishes for residential and commercial interior drywall walls and ceilings. The system offers an alternative to other upscale decorative finishes including Venetian-style plaster and marmorino products, colored-textured plaster products, high-end wall coverings, and specialty paint finishing and marbleizing. The natural, mineral-based finish system lends a look of color and depth to interior surfaces in virtually any color. Custom colors are achieved through the Colortrend system from Creanova Inc. 800/USG-4YOU. United States Gypsum Company, Chicago. **CIRCLE 223**



▲ Customizable plaster
Fresco Plaster Finish is available in a range of finishes from matte to high gloss. Initially utilized for protection, various penetrating sealers provide sheening characteristics. An entirely customized process, installation is a two-coat-system consisting of a base coat for foundation and strength and a finish coat for variegation and texture. Nicks and scratches are removed with a scouring pad or lightweight sandpaper. 847/639-1484. The Designer's Touch, Fox River Grove, Ill. **CIRCLE 224**

▲ Coating for multiple surfaces
Megaflon coating meets the weatherability and chemical resistance standards of PVDF finishes and features a range of color and gloss options. Megaflon adheres to a range of substrates, including steel, copper, aluminum, concrete, glass, and even plastic surfaces. It can be applied by spray, brush, screen, or coil coating. 800/876-8035. PPG Industries Inc., Springdale, Pa. **CIRCLE 225**

▼ Glow paint aids escape route
Permalight's three UL-Listed glow paint systems cover acrylic on walls, paper, and cardboard; epoxy on concrete; and polyurethane on metal and industrial surfaces, regardless of surface stress. Permalight was installed in the World Trade Center stairwells to mark escape routes following the 1993 bomb attack. 310/891-0924. American Permalight, Torrance, Calif. **CIRCLE 226**



▲ Neutral multicolor system
The Aquafleck 100 percent acrylic latex multicolor system has introduced the Linen Collection, a palette of 30 neutral multicolor patterns. The Linen Collection offers a palette of neutrals that are heavily influenced by the natural hues of brown, gray, yellow, purple, and red. The patterns are subtle enough to add texture to an interior design project, yet complex enough to complement more vibrant accent colors. 800/225-1141. California Products Corporation, Cambridge, Mass. **CIRCLE 227**

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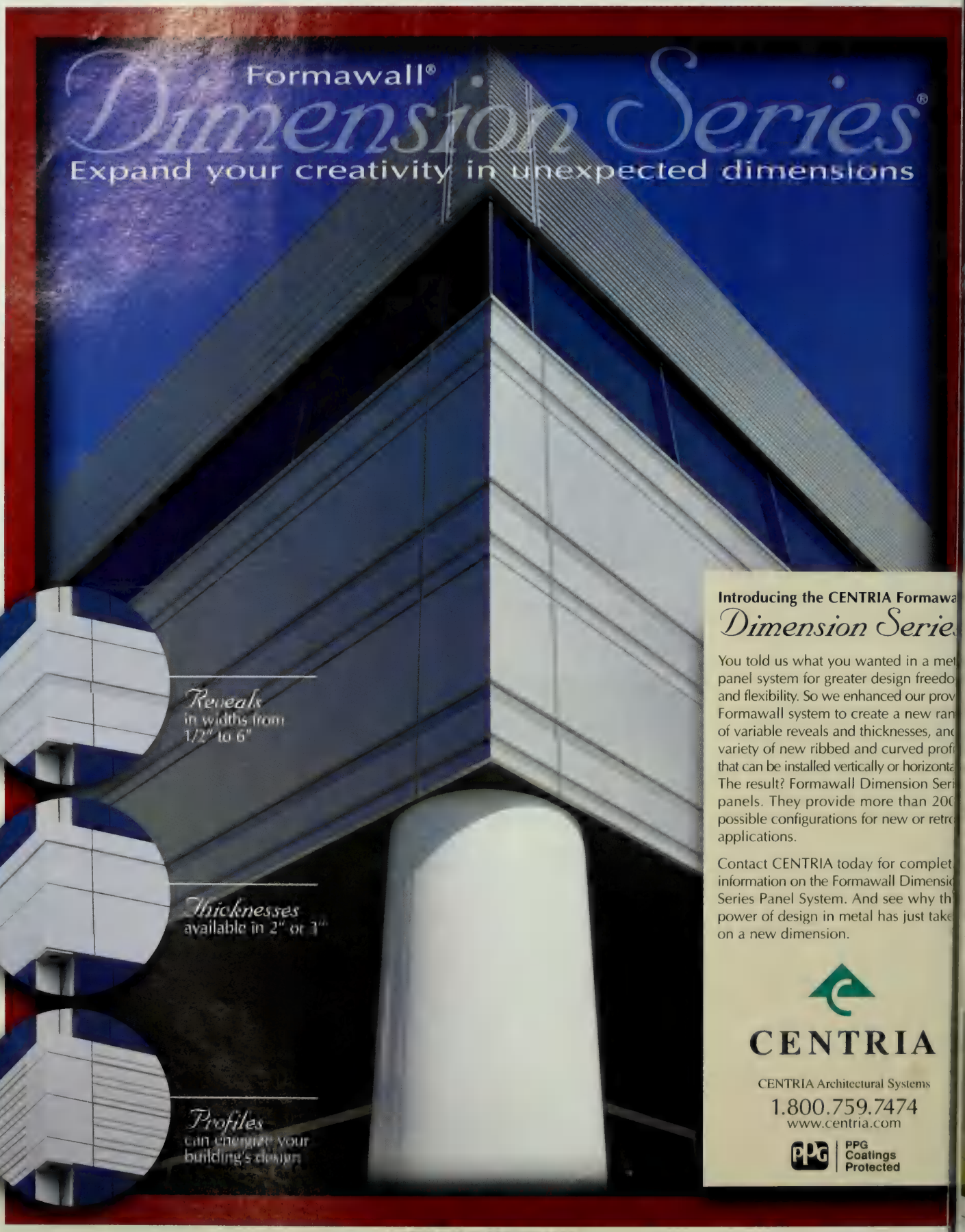
CIRCLE 69 ON INQUIRY CARD



CIRCLE 70 ON INQUIRY CARD

► Nesting tables

The Move-it table series, licensed from Gebrüder Thonet Germany, is appropriate for seminars, training, or cafeteria use, whether solo or in conjunction with others. By lifting the table to a 15-degree angle, two back wheels touch the floor and the table may be moved to any position. Once the table is set down, the angled glides lift the wheels off the floor, and the table cannot be rolled.

The tabletop can be raised from the framework by releasing the latches located on both sides of the table. The tables may then be slid onto one another to nest against the wall—like shopping carts for storage. 336/889-2009. Davis Furniture Industries Inc., High Point, N.C. **CIRCLE 228**

► Skin deep

Embossed Skins, a new imprinting tool, has been added to Scofield's Lithotex Pavecrafters architectural concrete imprinting system. Flexible Embossing Skins allow contractors to apply subtle texture, without joints or pattern marks. The tool is designed to make the imprinting process faster and easier for contractors by allowing them to add joint and grout lines as needed across the flatwork after the surface texture has been imprinted. Lithotex Pavecrafters are a system of mat-type imprinting tools that add detailed textures to the surface of freshly placed architectural concrete flatwork. The residential patio above has been textured with Lithotex to create the look of fractured slate. 800/800-9900. L.M. Scofield Company, Douglasville, Ga. **CIRCLE 229**

▲ Cranky lever

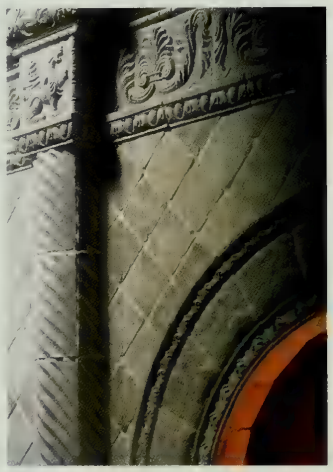
The Nanz No. 2116 is inspired by a crank on a 1930s Cincinnati "Royal 16" drill press. The lever may be specified for tilt-and-turn windows as well as interior doors. Shown here in satin nickel, the lever can also be manufactured in plated or patinated finishes. 212/367-7000. Nanz Custom Hardware, New York City. **CIRCLE 231**

▼ Save a trip to the kitchen

The Viking undercounter refrigerator is 24 inches wide and certified for indoor or outdoor use. The refrigerator contains three sections: a top wire shelf for storing open wine bottles or containers; a middle section that holds 112 12-oz. cans; and a wine rack on the bottom, which cradles 14 bottles horizontally. The indoor model comes with a clear-glass, fluted-glass, or solid door. 888/845-4641. Viking Range Corp., Greenwood, Miss. **CIRCLE 232**

▼ Ceramic accents

Inspired by the ancient architecture of Spain, the Sonoma Reserve tile line is meant to be installed with stone and consists of mouldings, decorative liners, and smaller decos. Glaze chemist and artist Greg Daggett used over 1,000 pieces of tile to get the correct glaze for the line. Sonoma Tilemakers specializes in carved-relief tile but produces assorted sizes of field tile and numerous liners and moldings. 707/837-8177. Sonoma Tilemakers, Windsor, Calif. **CIRCLE 233**

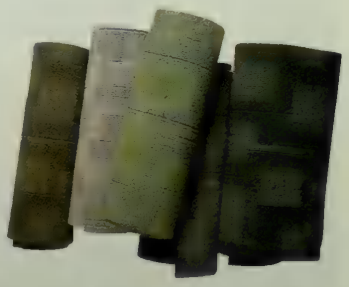


▼ Watch your steppe

Crafted from DuPont Legacy nylon, the geometric design of Steppe was inspired by the Grand Canyon. Harbinger patterned Steppe in a mirage of overlapping rectangles and squares that give the commercial carpet a multidimensional look. Steppe also features multilevel loops of textures and two-tone colorations. Steppe is available in 16 colorways, including a range of earth tones, grays, and deep jewel tones borrowed from the Grand Canyon's multicolored canvas. 800/554-6637. The Harbinger Company, Kennesaw, Ga. **CIRCLE 234**

◄ Exterior grade wood panel

Parklex 1000 is a prefinished exterior grade wood panel. This system has been treated with thermo-hardened resins and has a Bakelite core. It is suitable for exterior applications with minimum maintenance required. Typical wood finishes include eyong or boak in a natural or brown color. A commercial wood panel flooring with a resin finish is also available. 310/396-9991. Finland Color Plywood Corp., Venice, Calif. **CIRCLE 230**

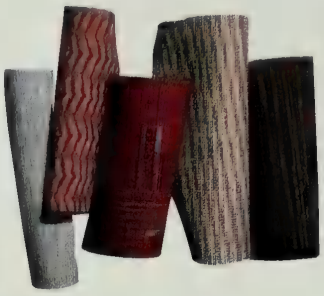


For more information, circle item numbers on Reader Service Card

PRODUCT BRIEFS

▼ Back to the drawing board

The Dordoni Worktop can serve as a desk, a drawing board, or even a conference table. Made of natural or blue-lacquered beechwood, the table is also available in other colors by special order. Dordoni's chromed-steel, angled legs give ample leg room, and the table's glides are adjustable to cope with uneven floors. If the drawers are pushed to the back end of the desk, where they are also accessible, the user has convenient storage space for rolled-up blueprints and drawings. The Worktop holds up to eight drawers, which are sold separately. The table measures 29 inches high, 73 inches wide, and 36.5 inches across. 800/944-2233. Design Within Reach, San Francisco. **CIRCLE 235**



▲ Now you see it, now you don't

Climatex Lifecycle textiles are the result of an unprecedented agreement between Carnegie and DesignTex. The fabrics' environmentally friendly construction incorporates biodegradable fibers and reengineered chemical manufacturing technology. At the end of their life as upholstery, the fabrics can become compost. The four designs reflect the natural wool and ramie materials used in their construction. For example, Topsoil is a textured plain, while Heartland has the sense of planted fields. 800/727-6770. Carnegie, Rockville Centre, N.Y. **CIRCLE 236**

▼ Steamy kitchen addition

The Series 1100, part of In-Sink-Erator's full line of instant hot-water dispensers, features a lever that delivers 190-degree water right at the kitchen sink. The Series 1100 is available in two models; the GN model dispenses hot water only, while the HC model also dispenses water from another source such as cold tap water or filtered water. Both models are made of brass and are available in three finishes: chrome, stain nickel, and white. 800/558-5700. In-Sink-Erator Division, Racine, Wis. **CIRCLE 237**

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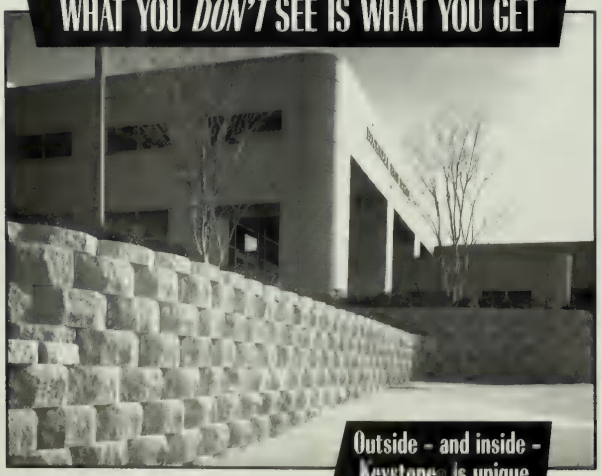

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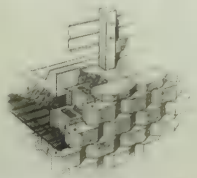

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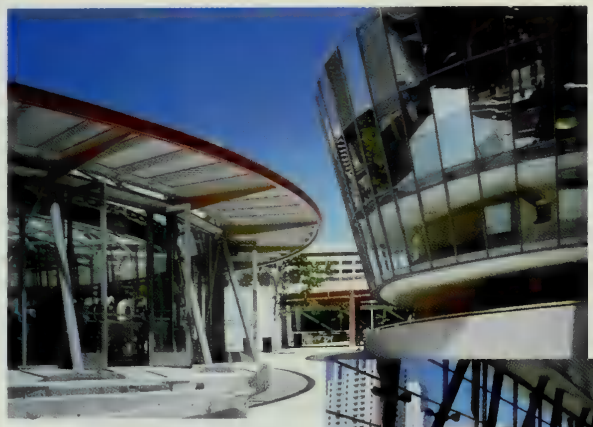
PRODUCT BRIEFS

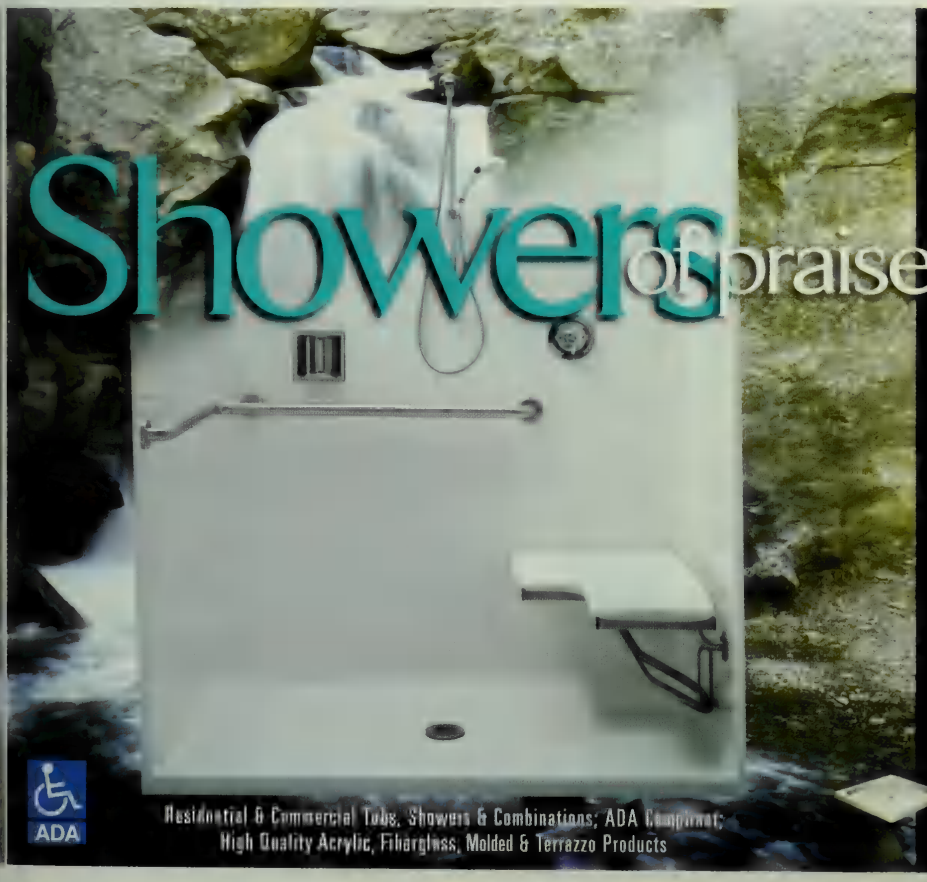
▼ Roofing from the ground up

Gunny Harboe, director of McClier's Preservation Group, Chicago, took on the task of restoring the exterior of the 20,000-square-foot Humboldt Park Stable. Harboe worked with Ludowici Roof Tile to replicate the original 1895 roof of the Chicago landmark. A challenge for the team was that the original 1895 roof was replaced with asphalt shingles in the 1970s. Luckily, pieces of flat, brown, glazed tile were found along the stable building, revealing the original roof style. Ludowici re-created the look of the 100-year-old tiles with historical accuracy. 610/341-7000. CertainTeed Corp., Valley Forge, Pa. **CIRCLE 238**



▲► Going round in circles?

The Children's Center is the final component in San Francisco's Yerba Buena Gardens project. The five buildings that comprise the center are organized around the circular forms of the enclosed antique carousel and the inverted conical space of the Children's Place lobby. The circular structures and the ice rink needed a curtain-wall system that could accommodate both the inverted slope and the asymmetrical glazing shapes created by that slope. The Series 5800 curtain-wall system features prefabricated silicone gaskets with integral corners capable of plus or minus five degrees from nominal angularity, allowing for the structure's irregular glazing shapes. 800/221-4169. EFCO Corp., Monett, Mo. **CIRCLE 239**



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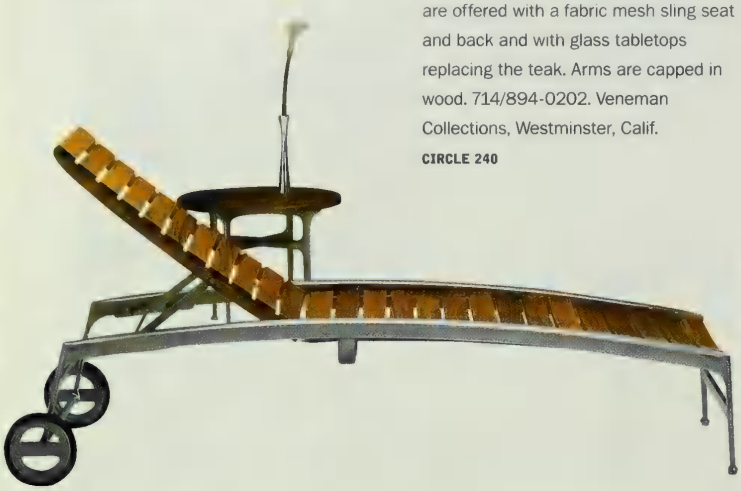
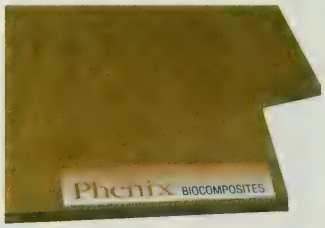
PRODUCT BRIEFS

▼ Silver anniversary

The Veneman Silver Collection, suited for residential and commercial use, features an unusual combination of natural teak nested within a cast aluminum frame. The collection includes an armchair; a backed bench; a barstool; dining tables in square, rectangular, and round shapes; two occasional tables; a teacart; and a chaise (shown). The teak, used as slats on seats, backs, armrests, and for table tops, is harvested from managed plantations. Kiln-dried, European-grade teak is shipped in an unfinished natural state and will weather to a silvery gray in about a year's time. The teak can also be oiled, as shown, or sealed to maintain its original brown tone. The metal comes in 18 finishes including 2 new textured metallics in silver and bronze. Also, the same designs are offered with a fabric mesh sling seat and back and with glass tabletops replacing the teak. Arms are capped in wood. 714/894-0202. Veneman Collections, Westminster, Calif.

CIRCLE 240





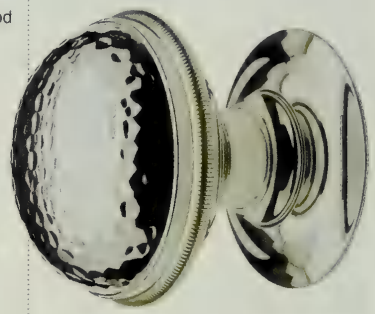
▲ Biological advantage

Biofiber is a new addition to Phenix Biocomposites' line of environmentally friendly products. Free from formaldehyde and made from wheatstraw, Biofiber can be used for furniture, table surfaces, store fixtures, cabinets, and flooring. Biofiber engineered composite panels meet or exceed traditional wood industrial particleboard (PB) standards. Lightweight, the panels are claimed to be more moisture resistant than wood PB panel products and feature a strong surface for laminating and finishing. 800/324-8187. Phenix Biocomposites, Mankato, Minn.

CIRCLE 241

▼ Decorative hardware

The traditional ER series door knobs and roses are part of the Enoch Robinson & Company collection from E.R. Butler & Co. Knobs are available in a variety of diameters that range from 1 ⅝ to 3 inches. The knobs are also available in a range from .5-inch to 1.5-inch diameters for cabinets and fine furniture. The turned knob and rose are made of solid brass, and standard, custom-plated, and patinated finishes are available. E.R. Butler provides consultation, specification, and finishing services to architects and their clients. 212/925-3565. E.R. Butler & Co., New York City. **CIRCLE 242**



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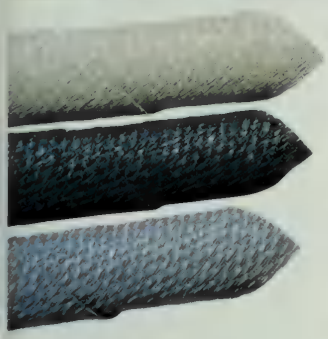
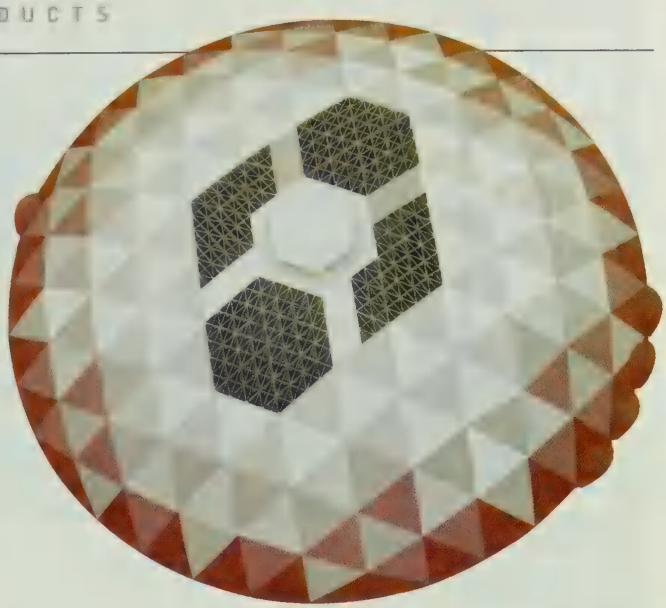
PRODUCT BRIEFS



◄ Waterproof vinyl flooring
Designed and manufactured in Sweden, Bolon indoor/outdoor vinyl flooring is waterproof, making it an appropriate option for kitchens, swimming pool decks, health clubs, and shops and restaurants. The flooring is available in a range of colors, from primaries to neutrals, and in five designs, including thin- and thick-stripe patterns, tweeds, and solids. 206/935-5471. Alison T. Seyour Inc., Seattle. **CIRCLE 243**

► Don't forget sunscreen
The angled slat design of the RioShade awning provides a diffused light that allows visibility and natural ventilation. The slatted exterior shade can be used to offer protection for patios, plants, and backyard equipment. Constructed from heavy-gauge aluminum, RioShade has a stone-chip coating and comes with a 10-year warranty. 800/23ROOFS. Gerard Roofing Technologies, Brea, Calif. **CIRCLE 244**



▲ Mechanically fastened roof
The Burke mechanically fastened system is ideal for new or reroof installations. On new roofs, Burkeline trained and approved applicators lay out and fasten the insulation board, roll on the Burkeline Hypalon single ply, fasten it with Burke-approved fasteners and plates, and weld the seams, making the installation complete. Burkeline Hypalon weighs less than a third of a pound per square foot and is abrasion, tear, chemical, fire, and wind resistant. Above, the Ensphere Dome in Eagar, Ariz., uses a mechanically fastened system that displays the custom colors of Hypalon available. 408/297-3500. Burkeline Roofing Systems, San Jose, Calif. **CIRCLE 245**

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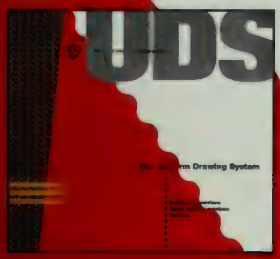

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PRODUCT LITERATURE

Educational CD-ROM

Acentech Incorporated has released *Architectural Acoustics*, a two CD-ROM set that covers the fundamentals of architectural acoustics. 617/499-8075. Acentech Incorporated, Cambridge, Mass. **CIRCLE 246**

Linear lighting literature

Starfire Lighting Inc. offers a new brochure detailing its Xenflex line of high-performance, low-voltage linear strip lighting using xenon gas-filled lamps. 800/443-8823. Starfire Lighting, Jersey City, N.J. **CIRCLE 247**

Drinking fountains and coolers

A new brochure showcases Haws indoor and outdoor drinking fountains and water coolers designed to meet both ADA requirements and all lead-free requirements of ANSI/NSF Standard 61. 510/528-2812. Haws Corporation, Berkeley. **CIRCLE 248**

Window and door catalog

A new catalogue from Peachtree represents the company's selection of premium entry doors, patio doors, and windows. 800/PEACH99. Peachtree Doors and Windows Inc., Norcross, Ga. **CIRCLE 249**

CD-ROM carpet guide

Bigelow Commercial's new CD-ROM product guide has more than 150 pages of product images, complete specification data, fiber facts, and backing options. 800/544-6637. Bigelow Commercial, Kennesaw, Ga. **CIRCLE 250**

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PRODUCTLITERATURE

Health-care art catalogue

American Art Resources has released a CD-ROM catalogue of framed art exclusively for health-care environments. The catalogue is free of charge and highlights more than 1,200 images sorted for different types of patients. 800/282-0204. American Art Resources, Houston. **CIRCLE 251**

Friendly concrete

The *Ecco Reference Library*, a new CD-ROM offered by the Environmental Council of Concrete Organizations, contains more than 1,200 abstracts of technical reports, articles, and other resources examining concrete and the environment. 800/944-ECCO. ECCO, Skokie, Ill. **CIRCLE 252**

Mosaic solutions

A 144-page catalogue from Sicis features a variety of ways mosaics can be used to enhance an environment. The catalogue is available free to architects and designers. 212/829-8341. Sicis USA Inc., New York City. **CIRCLE 253**

Southern pine booklet

A new, expanded version of the booklet *Pressure-Treated Southern Pine* has been published by the Southern Pine Council. This edition serves as a guide to the proper material selection, specification, and application of Southern Pine. 504/443-4464. Southern Pine Council, Kenner, La. **CIRCLE 254**

Waterproofing binder

TAMKO has released its waterproofing specifications and detail binder designed to keep distributors, contractors, and spec writers updated with TAMKO's waterproofing products. 800/641-4691. TAMKO Roofing Products Inc., Joplin, Mo. **CIRCLE 255**

Precast concrete brochure

The *Architectural Facade Systems* brochure from High Concrete Structures Inc. highlights the structural and functional advantages of specifying architectural precast concrete. 800/PRECAST. High Concrete Structures, Denver, Pa. **CIRCLE 256**

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FEES PART II (continued from page 67) be in a far better position to negotiate fees. During the discussions that led to the publication of *In Search of Design Excellence*, Weld Coxe of The Coxe Group characterized negotiating skills as the "the single most important skill architects lack." He also notes that many award-winning firms are profitable because they have the ability to negotiate. Compensation is also a self-esteem issue. Architects who can say, "What I have to offer is worth something, pay me," are more likely to make money and make good architecture.

3 UPDATING CONVENTIONAL WISDOM

A principal of one highly profitable firm says, "The most valuable hours we spend are on proposals, contracts, and negotiations. If we don't take these activities seriously, we can't make money on our designs. There is nothing else that has this much economic benefit for our firm." Michael Strogoff, aia, a Mill Valley, Calif.-based negotiations consultant, lists the results of a successful negotiation as "a clearly defined scope of work, fees that budget for both quality and profit, well-defined responsibilities that match the client's objectives for the project, reasonable terms, allowances for expanded services, and a good relationship with the client."

In addition to the strategies mentioned above, which may seem incompatible with more traditional ways of viewing the profession, there are more straightforward methods that can help improve the bottom line. During the last recession, when it was still very difficult to get work and to negotiate reasonable fees, many architects tightened operating policies to stay in business. They instituted rather straightforward, simple business procedures, which allowed them to remain solvent.

These conventional-wisdom strategies include screening clients before going after new work; walking away from clients who have unrealistic expectations; taking the time to establish a realistic scope of work and schedule; charging the client if the scope increases; stopping work if the client falls behind in payments; and making sure that the client understands the terms of the contract. These are sound business practices that should be embraced by all firms—large or small, traditional or progressive. Lowell V. Getz's book, *An Architect's Guide to Financial Management* (1997, AIA Press), is a good source for additional information on these basic rules of doing business.

CONCLUSION: *In a perfect world, architects would be able to do what they do best—design the built environment—and, given the importance of this task and the knowledge and talent necessary to perform it well, be paid handsomely for it. But since the beginnings of the profession, architects have struggled with pay scales disproportionate to their skill. The actions of the Justice Department in the late 1960s, which led to a widespread misunderstanding of architecture on the part of the American public, as well as changes in the profession that have made it increasingly complex, have only exacerbated this situation. Architects have been forced to evolve and to change the way they do business just to survive. Some have taken radical positions, while others have amended their business practices in more conventional ways. Many architects pine for the days of the "master builder," when architects were the building professionals, but all indications are that the market pressures and regulatory environment that have affected the profession during the past few decades will continue. The future of architecture depends on a constant reappraisal of the profession and the new opportunities that arise, including a fresh, realistic approach toward making money.* ■

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HOUSING *(continued from page 83)* The new developments that appear to be doing well, such as Baltimore's Lexington Terrace and Atlanta's Centennial Park, combine bricks and sticks with a range of social services—such as day care and job training. They rebuild people as well as housing.

Yet despite encouraging stories, like those about Milwaukee's Hillside Terrace, where the number of households with tenants holding jobs shot from 15 percent to 61 percent during a renovation completed last year, no evidence demonstrates conclusively that public-housing families, whose median income is $9,257 per year, are moving into the mainstream—and off welfare. "Are we getting people to be self-sufficient?" asks Jerry Salama, a research fellow at the Center for Real Estate and Urban Policy at New York University Law School. "It's too early to tell."

Displacing the poor from the projects to new ghettos also presents a huge problem. That's because 100,000 housing units have failed a viability test that calls for the demolition of complexes if it is more expensive to maintain them than to simply relocate residents with Section 8 vouchers. "We believe that Section 8, that having people live not in public housing, but in private-market housing with a subsidy, is the preferable way to go," says HUD's Bacon.

SUCCESSFUL PROJECTS REBUILD PEOPLE AS WELL AS HOUSES.

But that's not what was happening, according to a 1998 *Chicago Tribune* analysis of the first wave of people—more than 1,500 since early 1996—to leave Chicago's projects. It showed that project residents had simply moved from one poor, segregated community to another. Almost 50 percent of families had moved into census tracts where more than half of their neighbors live below the poverty line. More than three-quarters resettled in census tracts that are more than 90 percent black.

New low-rise and old high-rise buildings at Henry Horner sit along the El line.

Reviewing three HOPE VI projects—Cabrini-Green in Chicago, Centennial Place in Atlanta, and Spring View in San Antonio—in the journal *Housing Policy Debate*, Salama concludes that the $625 million program, though worthwhile, lacks the financial wherewithal to carry out its goals, in part because it is not leveraging enough private funds. At the same time, he observes in an interview, housing authorities "are finally hunkering down and saying, 'Let's make this work.' If you could get

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around the bad blood of housing authority relationships and get things going," Salama adds, "you could actually do some good projects."

Perhaps. But in Chicago—which contains nearly one-fifth of the public housing that HUD has targeted for demolition (19,000 of 100,000 units)—the challenge is formidable. Nowhere is it better illustrated than at the 1,533-unit Henry Horner Homes, which was the subject of Alex Kotlowitz's 1991 book, *There Are No Children Here: The Story of Two Boys Growing Up in the Other America*. The warped expectations formed by this "other America" were encapsulated in the words of the two young brothers, Lafeyette and Pharoah Rivers. Speaking of the future, they would say: "If I grow up" rather than "When I grow up."

A long way to go before it is normal

While the $120 million Horner redevelopment was not funded by HOPE VI, instead receiving a variety of federal funds from other sources, it tries to accomplish the same goals, using New Urbanist design principles like reinstating streets, alleys, and sidewalks as a means to integrate public housing with its surroundings and attract working families. The plan—drafted by San Francisco architect Peter Calthorpe and modified by the Chicago architecture firms of Johnson & Lee and Solomon Cordwell Buenz & Associates—has done that, but it has a long way to go before the former superblock, renamed "The Villages of West Haven," could be considered a normal neighborhood.

The main reason: poor screening of tenants by the housing authority has undermined the goal of creating a stable community. Not only are some apartments harboring drug dealers, but some residents lack the skills to care properly for their homes. One tenant, for example, reportedly tried cleaning her carpeting with a mop, ruining it in the process.

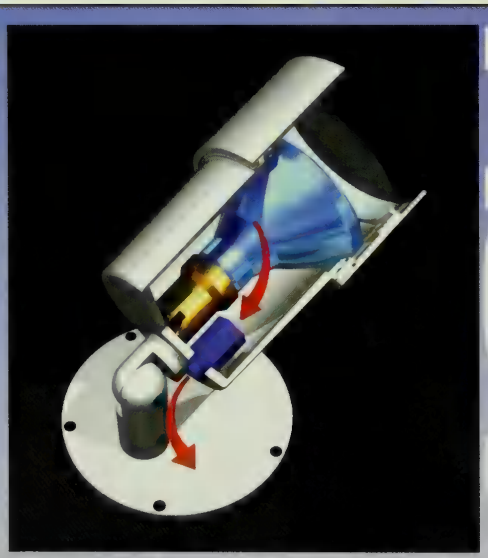
Such telling details place buildings in a new light. They don't seem strong and permanent. They appear fragile, vulnerable, subject to human foibles. Architects who have designed lots of public housing know all too well that design can't rebuild lives by itself. It needs help—over the long haul, not just on move-in day.

Says architect Lee: "If the family's not together, if Dad doesn't have a job, if Mom doesn't go to work, then architecture isn't going to solve all the problems." He adds, "You can put people in the Taj Mahal and if you have all the problems, it's going to be the Taj Mahal in disrepair."

Still, the trouble remains restricted to a small portion of the first phase of the new Horner development, which includes 380 new homes. "They call this the country," says resident leader Sue Sago, 45, who lives on tidy Randolph Street, one block north of troubled Maypole. Pointing to Maypole, she says, "They call that the city."

Like the nation's efforts to transform public housing, the new residences at Henry Horner remain a work in progress. Housing has a life over time, just as people do. Its ability to transform lives depends on who occupies it—and how well prepared they are to climb the ladder out of poverty. Due to HUD's new emphasis on humanistic design, architecture has opened the door to creating successful mixed-income communities.

But it is the people who live there who have to cross the threshold, and many more have to do so before HOPE VI makes a significant impact on the problem of poverty. To be sure, HUD and the New Urbanists deserve credit for engaging one of the most vexing social problems of our times. Yet what they have accomplished is little more than a beginning. Now, the task is to maintain quality while expanding the quantity of new housing. Much more needs to be done if we are to write the final chapter in the sad tale of "the Other America." ■



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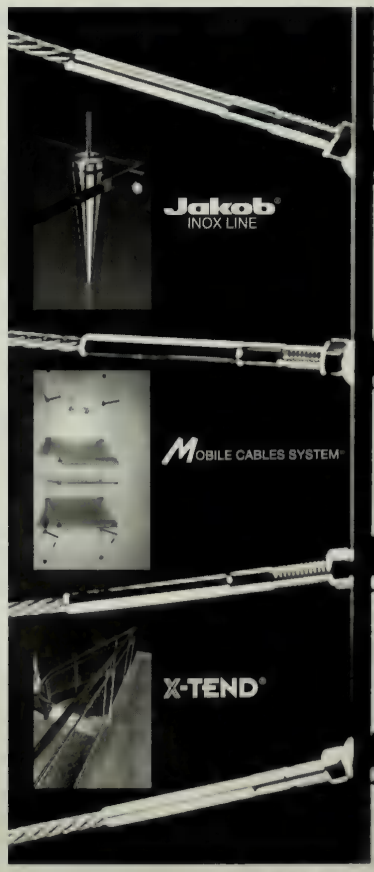

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ANSWERS

Questions appear on page 138. To receive CES credits, fill in the education reporting form below or on our Web site (www.architecturalrecord.com).

1. Paints are made of finely ground solids, including binders, pigments and additives, that are suspended in a liquid carrier. Paints get their color from pigments. Metallic pigments or organic pigment synthesized from petrochemicals are used to add color. Most use powdered titanium dioxide for the primary pigment because of its superior hiding power. Fillers increase the solids content of the formula. Examples of these are calcium carbonate, silicas, and silicates, all of which help eliminate chalkiness and improve scrub resistance. Binders, including urethanes, alkyds, and acrylics, form a film that knits the particles of pigment together. The carrier evaporates as the paint dries, leaving the solids behind as a thin surface film that clings to the underlying surface.

2. Both alkyd and latex paints were developed in the 1940s. Alkyd paints are made with synthetic resin binders (called alkyds) that are dissolved in a petroleum-based solvent. Latex paints use vinyl binders and a water carrier. Originally latex paints were less durable and did not adhere well. Subsequent improvements, specifically the introduction of acrylic and urethane binders, have improved quality. Alkyd paint forms an impermeable film through constant surface oxidation. This process, which goes on for the life of the paint, causes alkyd films to lose their color and become brittle. Acrylic particles draw together as the water evaporates, forming a stable yet flexible film that expands and contracts with the underlying surface. As a result, acrylic paints hold their color longer than alkyds and are less susceptible to cracking.

3. The ingredients of a paint are suspended or dissolved in a base that is either oil or water. Oil-based paints use petroleum-derived hydrocarbon or natural-oil solvents such as linseed. New clean-air laws mandate that the amount of volatile organic compounds in paint be lowered. That means reducing the amount of solvents that the paint contains. To meet the new rules, manufacturers have been switching nearly all their products from oil- to water-based formulations. Manufacturers have focused on developing water-based coatings that are harder, more colorful, and more UV-resistant than their solvent-based predecessors.

4. Low-odor paints are formulated with little or no solvents. Even latex paints have always included a small amount of solvent to soften the binder's particles and facilitate film formation at low temperatures. Low-odor paints use softer binders that don't require solvents for film formation and, therefore, emit no odors. The softer binders can create problems with tackiness and film formation. Combatting these problems has meant putting expensive additives into the formulas which increase the costs of these paints.

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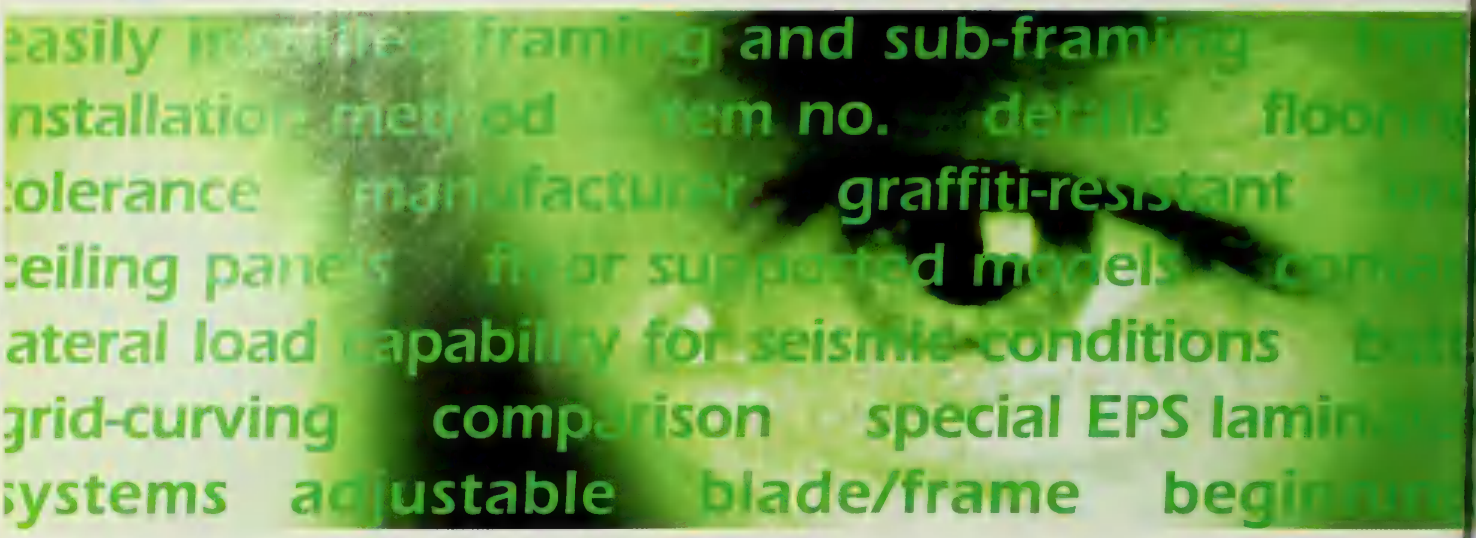

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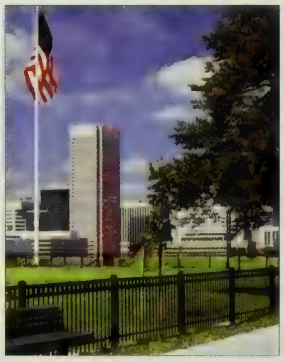

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The Hardwood Council

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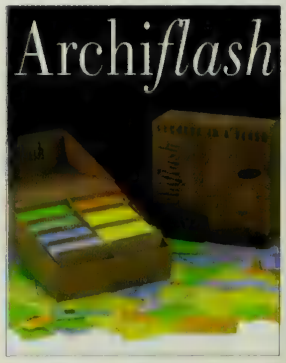

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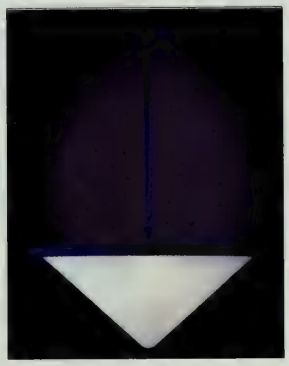

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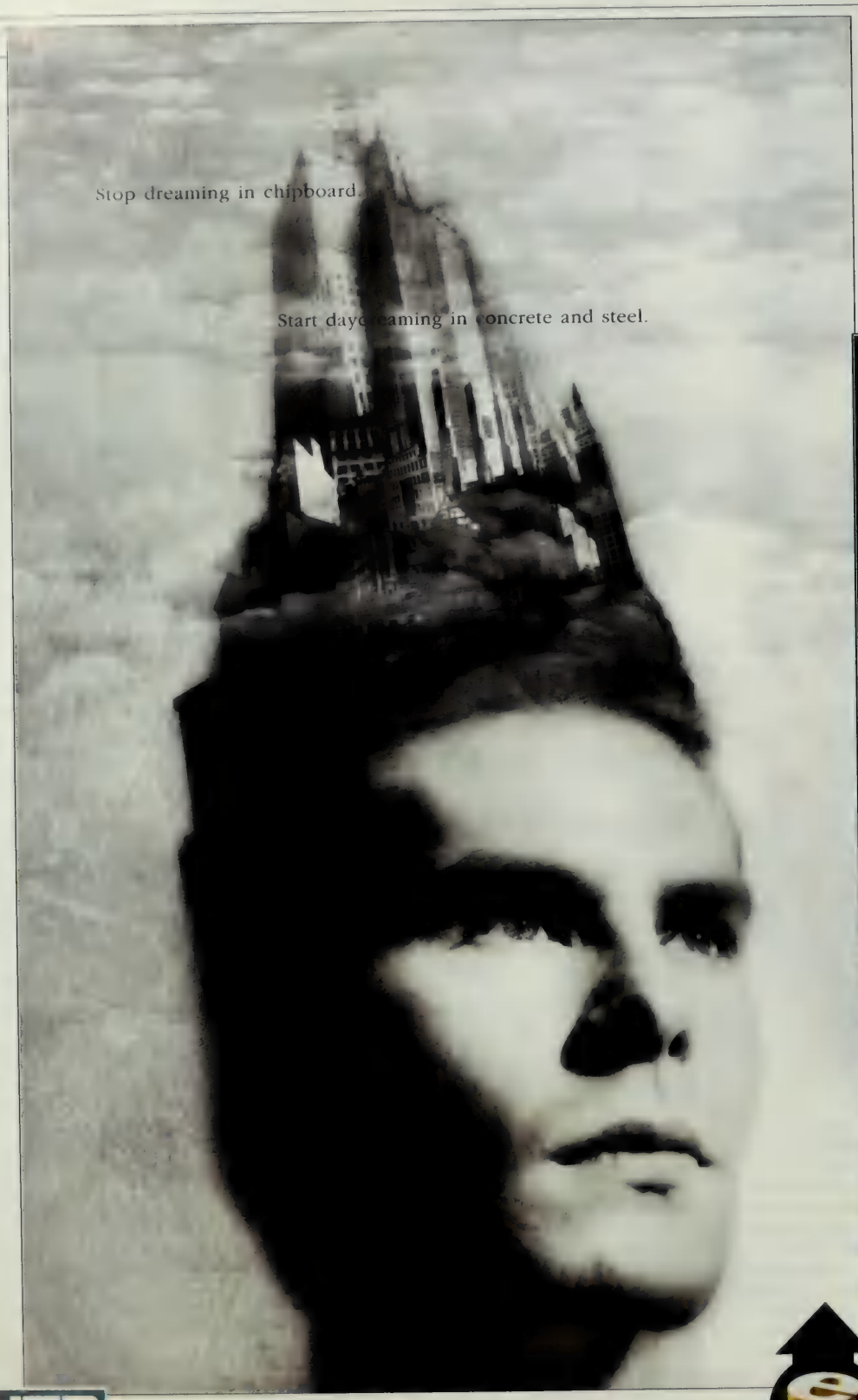

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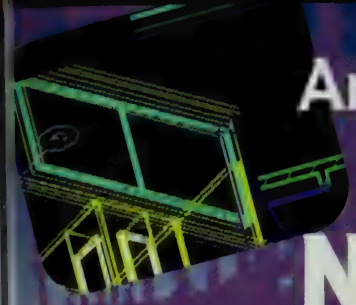


Architectural Employment: Now and in the New Millennium

The late 1990s undoubtedly will be remembered as a golden era for architectural employment. The record-breaking demand for architectural services has propelled architect's compensation and benefits to new levels. In this recession-free market, the most difficult task has fallen upon the employer—to find and retain talented architects. As a consequence, the employment scenario for the profession as a whole has likely been altered.

by Nora Richter Greer

The Economy and Employment Trends

It's clear that the boom and bust cycles of the economy affects the architectural profession as much or more than any other, especially the profession's employment ranks. We've all heard the stories. During the economic recession in the early 1990s, an ad for an architectural project manager might have easily brought over 200 responses, where today you might receive the resumes of, say, 20 at most depending on the project. That early '90s recession also caused a lot of young architects to leave the field, so that there is a serious gap in the number of professionals in their late 30s/early 40s, a sought-after experience level. Woo them, or eventually lose them.

Boom and bust also affects the stability of architectural firms. Kermit Baker, AIA's chief economist says, "I've heard that 25 percent of architecture firms went out of business during the 1990s recession. If you have that constant churning, it is only the very large firms that are going to be 30, 40, or 50 years old. The smaller firms are constantly organizing and reorganizing." In fact, the 1997 firm survey reported a drop in the number of AIA member firms 17,000 in 1993 to 15,000 in 1996, which reflects mergers as well as firms going out of business. Downsizing doesn't bode well for employer/employee relations.

Now the tables are turned. The U. S. Department of Labor reports that during the past three years, the number of available positions at architecture firms increased by over 30,000, or almost 8 percent per year. The act of recruiting has become one of rigorously merchandizing the long-term benefits of working for your firm. In fact, recruitment and retention are automatically tied together, as are compensation and benefits.

Benefits? Virtually all architectural firms offer medical insurance to their employees, according to 1999 AIA Compensation Survey, compared to only 64 percent at the beginning of the decade.

Nora Richter Greer, a journalist in Washington, D.C., frequently writes about architecture and design.

Compensation and Benefit Trends

Compensation at U.S. architecture firms has increased sharply in recent years. Baker cites an "upwards of 10 percent per year in the last three years." And that, he says, "in the face of government statistics that overall compensation in the economy is growing very modestly."

Baker suggests these reasons: "Either architects were very under-compensated and they are catching up. Or there is just such high demand that they are being overly compensated now. Another interpretation is that there have been huge productivity gains in the practice of architecture. And these compensation gains are reflecting the fact that the average architect is more productive now then he or she was five or ten years ago. The argument for that would be that CAD systems are making the practice of architecture much more efficient."

According to the *1999 AIA Compensation Survey,* Baker's diagnosis makes sense. The authors of the survey suggest that because the construction sector is one of the most sensitive to changes in business conditions, this often produces large swings in profit levels at architecture firms. Therefore, architect compensation is likely to grow faster than for other professions during periods of greater growth and decline more slowing in times of recession.

The greatest gains have been registered for intern positions. Among architects, compensation for less experienced categories has generally risen a bit faster than for most experienced categories. Compensation for principals and partners tends to be more volatile because a portion of compensation typically is based on the financial performance of the firm.

Because of the industry's volatile economic nature, it's not surprising that many firms have turned to profit sharing as a standard benefit. In real figures, Baker sees "dramatic increase in benefits. Virtually all firms are offering standard benefits package. Five or ten years ago, that was very rare, other than in large firms. Architecture is now catching up with other professions." Now it is common to find sign-on bonuses, profit sharing, stock ownership, and quarterly bonuses, among other financial incentives.

When discussing architectural employment trends its important to distinguish the difference between large, medium, and small firms. Obviously, the larger firms have different employment needs, but also different economies. For example, according to the *1999 AIA Compensation Survey,* architecture compensation for comparable positions tends to be 10 to 20 percent higher in larger firms. Average compensation

for principals and partners with 50 or more employees is 67 percent greater than for firms with fewer than 10 employees. Some of this differential, however, is due to a different structure of compensation packages.

Recruitment Trends

Even though the marketplace for applicants is extremely constricted, employers hunt for special candidates. In other words, there is competition for quality, despite the lopsided numbers in favor of those seeking employment. A major battle is often waged in the human resource department of large firms as they weigh the trade-off between taking the time to attract the "right" employee or hiring someone to fill an urgent employment need.

Perhaps the easiest experience level to recruit is that of intern. Many firms have standing relationships with local colleges or universities through which prospective interns are regularly introduced to the firm. Internet employment services, while serving all levels of employment, seem particularly suited to the intern level.

In most demand are special job-related skills that are not necessarily taught in architecture schools and are gained only through experienced or special education.

"We are looking for people with entrepreneurial skills," says Steven Reiss, AIA, of HNTB." People who are comfortable in the business world. This is not a skill set taught in school." Reiss maintains that few architectural students, and even young architects, have any background in the financial arena.

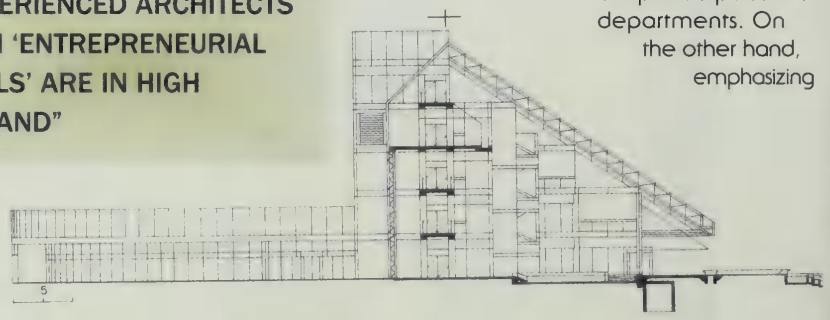
It's a catch 22 situation, though, suggests, Sandy Stevenson, AIA, of URS Corporation, for "these crucial skills can't be learned in an academic setting, but must be learned through on-the-job experiences." He, therefore, looks for candidates with those acquired skills.

Currently architects, as a whole, seem to have adequate entry level skills in computer technology and basic technical skill sets. The prize employee, however, is the one who can take the technological skills a step further and apply them to design and delivery in a creative and efficient way. And it is tricky to convey that technological wizardry on a two-page resume.

The younger generation's interest in computer technology and other technological and scientific skills may be draining architecture of talented candidates. William Keene, AIA, of Holmes and Narver, a firm located in Southern California, sees young talent headed for the 3-D animation studios of Disney rather than the architectural boards. Others, such as Steve Latas, see potential architects heading for the scientific or high-tech labs.

There are the highly prized "read-between-the-line-skills." According to our sources, these might include special design talents (which might be conferred by the school interviewee attended or special awards), communication and interpersonal skills (which can be useful within the office environment and in relations with clients), and a sense of humor. The Hillier Group's Peter Hoggan praises a candidate's creative, imaginative talents and passion for the profession over demonstrated technical skills.

"EXPERIENCED ARCHITECTS WITH 'ENTREPRENEURIAL SKILLS' ARE IN HIGH DEMAND"



HNTB recently went the unusual route of recruiting several people who have theatrical backgrounds to help the firm with project presentations, because, says Reiss, "the presentations have to be like one act Broadway shows. You have to have a backdrop. You have to have a script, someone to present the script."

In addition to websites, executive recruitment firms, or headhunters, can be effective in locating more experienced level architects who specialize in certain program areas. Other employers rely on the more traditional form of networking, using personal relationships and word of mouth to find new employees. This, however, is time consuming and firm principles have indeed noted increased amounts of their workweek spent on recruiting.

The tight labor market has forced employers to rethink the interviewing process. No longer does a firm have the luxury to say, "We'll call you in a week, or so."

Nor can interviewers fumble around when asked about firm benefits and retention policies. "The interviewer must be well prepared, with a strong sense of what the company has to offer a candidate, while at the same time trying to discern whether this is the person to hire," says Steve Latas, of the recruitment firm Latas & Associates. "When a candidate sits in front of you and asks you what the potential is with the company, you can't just sit there and say the sky is the limit. They have all heard that before."

Retention Trends

The growth potential of the individual is now the long-term goal driving retention policies. No longer are architects just seeking jobs, but rather opportunities leading to career development. This is not unique to architecture, but is witnessed throughout the business world as human resource departments have replaced personnel departments. On the other hand, emphasizing the value of the individual contributes to the value of the firm. "If we share our knowledge and keep people here, we become a smarter firm," says Gene Mackey, co-CEO of Mackey Mitchell Associates in St. Louis. "We never lose sight of the fact that our people are our most valuable asset."

Architects talk proudly of the low employee turn over in their firms, loosing few managers or principles over a ten-year period, for it brings an ease and consistency to the firm's work. It also brings, as Paul Danna, AIA, of DMJM says, a corporate culture to the office. "The Los Angeles section of DMJM has a certain personality," Danna says. "Young architects and clients are attracted to that." DMJM is conservative in its hiring. If business is brisk, the firm temporarily chooses overtime rather than hiring another employee until it is clearly time to expand, says Danna. The fear of overexpansion is always lurking.

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In many ways, architects, as employees, are pampered. It's not unusual to find special in-house seminars, outside educational opportunities, special travel opportunities, and other professional development programs. Work often involves travel outside the home city or home country. With firms located in nine U.S. cities, for example, HNTB allows their employees to float to other offices for months at a time. Of course, any liberal system can be abused, but when it's not, the opportunities seem to add to employee loyalty.

"OUR PEOPLE ARE OUR MOST VALUABLE ASSET"

Generally, employees seem to be closely scrutinized and expected to perform. Semi-annual performance reviews evaluate goals, strengths, and weaknesses, whether challenges that are being set are being met. In the long run, this type of review system can examine the supervisor's performance as well as employee's.

Future Outlook

Unless you are a member of Generation X, undoubtedly you view the favorable economic trends with some trepidation. You can remember the recession of the early 90s. You wonder what the next downturn will mean for your firm. As economist Baker says, "There are always going to be booms and bust. It is very difficult to bridge those."

Yet, Baker sees a silver lining in that ever-looming cloud of doom. Architects who suffered through the last recession, he says, have made significant changes in their practice. Diversity is the key, particularly for mid- and large-size firms. Diversity of clients. Diversity of staff. No longer are architecture firms just composed of architects, but also engineers, urban designers, facility managers, etc. Employee benefits are tied more to profits, particularly at the upper levels of management. Bonuses are relied on more than straight salary increases.

At the same time, Baker believes small firms have tended to become even more specialized and will continue to do so. "The small firm," he says, "will probably have to specialize more than in the past. The day of the general practitioner or architect is probably waning, other than in special circumstances. The sole practitioner or even the small firm is probably not going to be the soup-to-nuts designer but someone that does have an area that they are very proficient in that can team up with other appropriate players."

Diversifying one's market is not a new concept and is probably considered daily in the offices of architecture firms. In Pennsylvania and the Northeast, Hayes and Large have been involved in designing schools for several decades and are starting to branch out into other markets, particularly health care. In California, Holmes & Narver weathered the early '90s recession with Department of Defense contracts and its work now includes theme parks, retail and commercial. Holmes and Narver is eyeing overseas construction. "We have to keep looking for new markets," says Bill Keene, AIA, of Holmes and Narver.

Other avenues are available to architects, such as the corporate world. General Motors, for instance, is seeking experienced architects in its corporate office, according to Bob Valentine, who has been an architect for GM for over 30 years. He considers corporate architecture not the chosen path for everyone, but for the right person an excellent career opportunity.

ARCHITECTURE FIRMS DIVERSIFY PRACTICES AS BUFFER AGAINST FUTURE ECONOMIC DOWNTURNS

We listen everyday to the stock market reports and whether the Federal Reserve Board will raise interest rates. "If interest rates stay where they are, things are going to be positive for the architects," says recruiter Steve Latas. "Architecture is going to be a good field. If the interest rates jump up then architects might have problems. Then you will have more architects then you need. Right now everyone is building. Corporations and companies are expanding and modernizing."

Latas, whose recruiting firm also represents engineers, casts a vote in favor of firm diversity. "For A/E firms," he says, "the engineering side is strong. It doesn't really matter what the economy does over the next decade."

Obviously, when preparing for the future, one must review the most recent trends. Just this month Robert Murray, vice president of economic affairs for the McGraw-Hill Construction Information Group made the following conclusions for the year 1999:

- The brisk pace in early 1999 will enable single family housing starts to rise 7 percent for the year as whole, with a corresponding 7 percent increase in dollar volume.
- The public works sector is heading for a 6 percent gain.
- Institutional building is expected to climb 10 percent.
- School construction is registering double-digit growth.
- The income property group is projected to rise 7 percent in 1999, with some divergence among the various property types.

Murray concluded "without a doubt, these are very good times for the building industry—total construction contract value will climb another 7 to 8 percent in 1999, resulting in the highest amount of current dollar activity ever reported by F.W. Dodge."

Other studies examine what might influence the construction market in the years to come. Take for example *Baker's Changes in the Construction Market in the Next 15 Years*, published by AIA." Demographic trends were examined to determine building needs in the U.S. through the year 2005. The overall conclusion was that the gradual shift form new construction to rehabilitation, already evidenced, will continue.

The real intriguing question may be: What will the firm of the future look like? Listen HNTB's Reiss: "We'll see a much more eclectic mix of professions working within architectural companies' financial experts. Real estate experts. Technological experts. Clients will want us to be involved from the beginning to the end of a project. Will want architects involved in financing. In conceptualizing. In facility planning. In facility management. In construction as soon as possible."

At least it's probably fair to say diversity is here to stay. ■

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Employment Opportunities

FIRM	WEBSITE	# of OFFICES/ PRIMARY LOCATION	SCOPE of PROJECTS	# OF EMPLOYEES	HIRING NEEDS
DMJM	www.dmjm.com	44; Los Angeles	Architecture and Interior Design, Master Planning, Strategic Planning, Engineering, and Program Management for Projects Ranging from Corporate Headquarters and Civic Buildings to Education and Justice Facilities	1,899	90-100 Architects and Engineers
General Motors Corp., Worldwide Facilities Group	N.A	Detroit, MI	Industrial facilities, lab/test development facilities, engineering/office/administration buildings	150 Architects	20 to 30 New Hires
HBE	www.hbecorp.com	St. Louis	Planning, Design, and Building of Healthcare and Medical Facilities, Financial Facilities, Commercial Space and Adam's Mark Hotels & Resorts	7,000	N.A
HNTB	www.hntb.com	52; Kansas City, MO	Architecture, Urban Design and Planning, Design/Build, Preservation for Sports, Transportation, Higher Education, Civic, Convention Centers, Hospitality/Entertainment, and Corporate Facilities	2,500 +	Multiple, various
Hayes Large Architects	www.hayeslarge.com	5 offices—Altoona, PA	Architecture, Engineering, and Planning for Educational, Healthcare, Corporate, and Government Facilities	130	Strong/10% Growth
Holmes & Narver	www.hninc.com	2 offices; Orange, CA	Architecture & Engineering for Commercial, Government, Corporate, Industrial, Themed Entertainment, & Educational Facilities	176	About 10% Staff Growth in 2000
Bread Loaf Corporation	www.breadloaf.com		Corporate headquarters, Private educational, Healthcare, Industrial/commercial	100	Project architects, architectural designers, project estimators

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Employment Opportunities: Firms

FIRM	WEBSITE	# of OFFICES/ PRIMARY LOCATION	SCOPE of PROJECTS	# OF EMPLOYEES	HIRING NEEDS
Kaufman Meeks & Partners	www. kaufmanmeeks.com	3 offices/ Houston;Newport Beach, CA; Barcelona, Spain	Architecture and Land Planning for Commercial and Residential	100	Numerous positions at all levels in TX and CA
NBBJ	www.nbbj.com	6 U.S. Locations/ Columbus, OH	Design and Planning for Healthcare, Sports/Entertainment, Corporation Office, Higher Education, Research, Commercial/Resort, Justice, Airport and Retail Facilities	850 Nationwide	20+ in Columbus
Perkowitz & Ruth Architects	www.prachitects.com	3; Long Beach, CA	Architecture, Planning, Theater Design, Interior Design, Store Planning, Environmental Graphics for Retail, Entertainment, and Multi-Use	125	15
URS Corp.	www.urscorp.com	140	Corporate Buildings; Educational and Correctional Facilities, Hospitals, Healthcare, Industrial Complexes, and Multi-Use/Entertainment Centers.	15,700	300+

Employment Opportunities: Universities

FIRM	WEBSITE	LOCATION	ACADEMIC PROGRAM	TEACHING POSITIONS	HIRING NEEDS
Cornell University, School of Architecture	www. architecture.cornell.edu	Ithaca, NY	Architecture	All levels	Currently, position of Chairperson
Pennsylvania State University. Dept. of Architecture	www.arch.psu.ed	University Park, PA	Architecture	Tenure-track faculty position in an educational institution. Please refer to this special architectural employment section of Architectural Record.	Three or more tenure-track positions
University of California, Berkeley, Dept. of Architecture	Http://www. arch.ced.berkeley.edu/news /index.htm	Berkeley, CA	Architecture	Regular and adjunct faculty to teach courses in design, structures, building construction & exploration of material choices	1-2 appointments for fall of 2000

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For an architect interested in a one-firm, multi-disciplined team approach, DMJM offers the opportunity to work with interior designers, planners, engineers, projects managers, and construction and facility managers on a wide range of projects in the U.S. and overseas. Yet, at the same time, the firm's architectural philosophy and character is unique, according to Paul Danna, director of DMJM's architectural services.

DMJM's architectural division strives to provide "the kind of service and attention most clients associate with smaller firms and star design studios," Danna says. "Senior associates are actively involved from start to finish in projects, emphasizing design and detail to a degree rare in a firm of this size. Our build-to-suit efforts in architecture and interiors are unsurpassed, and our work is extremely progressive while remaining uniquely appropriate to client culture."

DMJM's current client roster includes BMC Software Inc., Rand, Ernst & Young LLP, Universal Studios, The State of California, the Walt Disney Company, and Unocal.

General Motors Corporation Worldwide Facilities Group

Corporate architecture is an avenue not often considered by architects but potentially offering tremendous career opportunities, suggests Bob Valentine, Director of Capital Projects for General Motors. An architect with GM for over 30 years, Valentine believes that working for a corporate giant like GM may not be the career path for every architect, but it offers a tremendous experience with excellent salary and benefits.

At General Motors, staff architects are responsible for hiring outside architects and engineers to design and build all corporate facilities, such as assembly and manufacturing plants, development labs and testing facilities, and engineering buildings at the GM Tech Center. The staff architects establish project criteria and objectives to assure accurate design solutions for GM

projects. According to Valentine, the work is quite challenging and requires an understanding of the industrial design process. GM has previously hired only experienced architects, but may soon turn to interns as a way of training in-house talent.

HBE

A corporate goal at HBE is to offer an environment and culture that creates challenge and a huge opportunity to learn on the job. The best employees, says Gary Fallert, Director of Human Resources, find a way to match up their professional and personal goals for an optimal work and personal life. "People can grow and develop here," Fallert says.

Great emphasis is placed on meeting the expectations of the client and on quality of work. So much so that even some employees who have left the firm have returned to once again strive for that type of excellence in HBE's work place—quite a complement to HBE.

HBE integrates architecture, planning, engineering, estimating, and construction. The firm is looking for individuals who understand its mission to deliver value, which requires a tremendous amount of integrity, intelligence, unselfishness, diplomacy, and salesmanship.

HNTB Corporation

HNTB has much to offer a new employee. As one of the largest architecture firms in the U.S., it is involved in an impressive variety of building projects. Its goal is providing world-class design combined with high-quality project management to its clients. The firm takes on the responsibility of helping the employee find the balance between growing his or her own career and helping the firm achieve its goals, says Steven M. Reiss, AIA, Chairman of Architectural Services.

A firm's special programs can be indicative of its underlying employee philosophy. With 50 offices in the U.S., HNTB sponsors firm-wide internal workshops that bring together junior-level architects with senior-level professionals in an education setting. These workshops demonstrate HNTB's commitment

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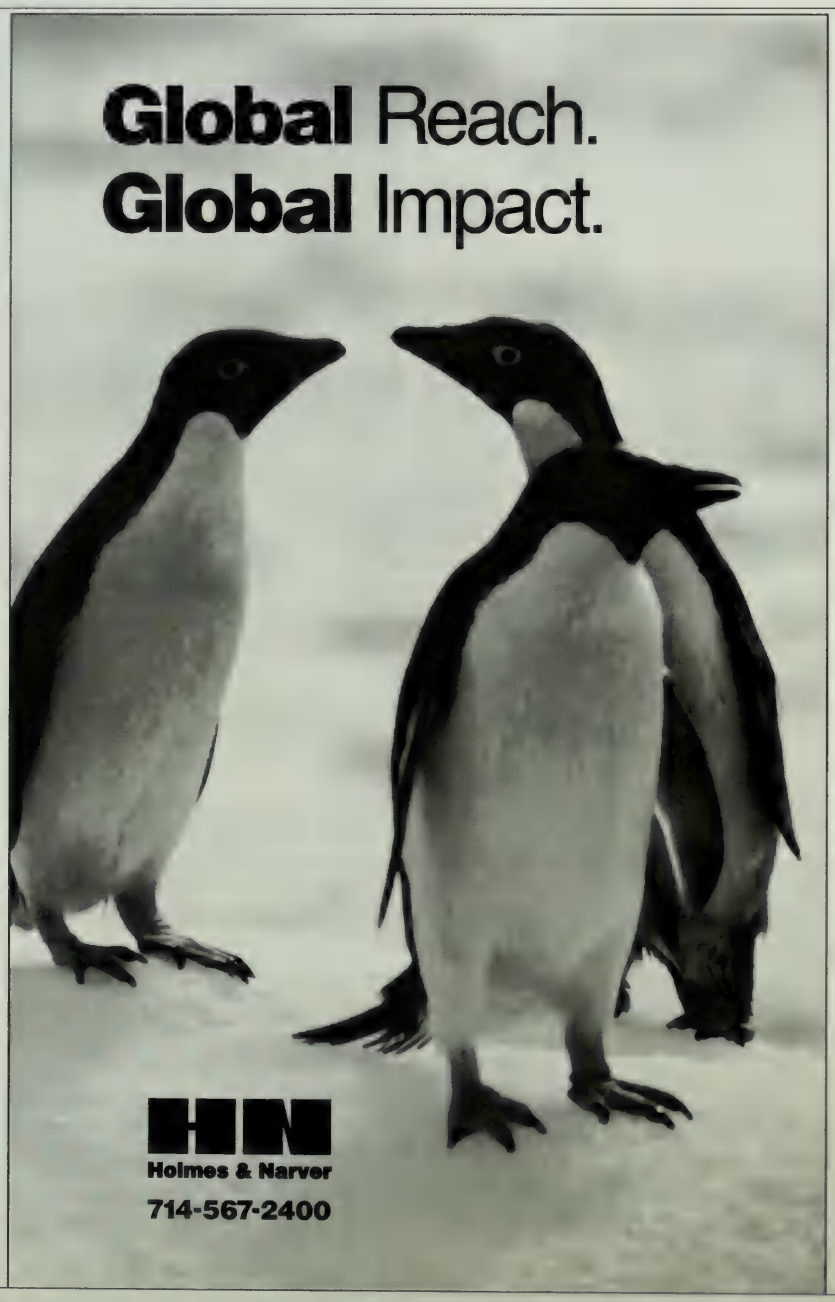

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School of Architecture and Landscape Architecture,
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The Department of Architecture at The Pennsylvania State University invites applications and nominations for three or more tenure-track positions at the rank of Assistant Professor or above, beginning in the fall semester of 2000. The university is one of the major educational and research institutions in the USA, offering students and faculty an academic environment of great richness and diversity. Recognizing the need to keep pace with educational changes in the future, the department is focusing on such critical issues in architecture as integrative thinking, environmental responsibility and other related social, ethical and psychological concerns.

The architecture program is fully accredited by NAAB, emphasizes professional practice and offers a five year Bachelor of Architecture degree. It is taught by twenty-one full-time faculty members, representing a broad spectrum of ideas and approaches to concept and theory. The department attracts the most outstanding undergraduate students in the university—accepting only one in seven applicants. The program's greatest strength lies in its emphasis on architectural design and the development of critical, analytical and artistic skills. The studio environment is supported by a superior model shop, a state-of- the-art computing center, semester-long study in Rome and a center for community design assistance.

Open positions include: Architectural design studio and visual communications at the introductory level; Third-year design, focusing on the synthesis of buildings in context; Fourth-year design, emphasizing architecture in an urban context and interdisciplinary collaboration. A Master of Science in Architecture, plus a Master of Architecture program (in development) are incorporated in the Department. Successful applicants will be expected to offer a lecture seminar course in one or more of the following areas: professional practice, architectural technology, ecological design and architectural theory.

Candidates must hold an accredited professional degree in architecture and a graduate degree, as well as have experience in teaching and practice. Participation in productive scholarship, professional, research and outreach activities is essential. Candidates should be licensed, pursuing credentials to practice architecture in the United States, or be eligible for reciprocal licensure. Applicants should submit a letter that clearly articulates their views on architectural education and design studio pedagogy. This document should specify area(s) of scholarly and creative research, past studio syllabi, secondary teaching interests, a curriculum vitae and names/addresses of three references and be mailed to: Professor Jawaid Haider, Chair of the Faculty Search Committee, Department of Architecture, 206 Engineering Unit C, The Pennsylvania State University, University Park, PA 16802. Phone: (814) 865-9535.

Applications received by January 10, 2000 will be assured consideration. However, applications will be accepted until the positions are filled.

Penn State is committed to affirmative action, equal opportunity and the diversity of its workforce.

PROFILES

to delivering the highest-quality projects—and staff—to its clients.

HNTB recognizes that professionals often find it hard to be highly proficient in both the technical/design and management sides of architecture and, therefore, offer two distinct career tracts.

The firm is currently seeking architects with strong entrepreneur skills, according to Reiss—"people who are comfortable in the business world." These skills, he maintains, are learned though experience rather than taught in architecture school.

Hayes Large Architects

Hayes Large Architects is seeking talented, experienced architects to continue its impressive history of long-term client relationships.

Since 1922, the firm has maintained its corporate headquarters in Altonna, PA., a community of over 150,000 nestled in the heart of the Southern Allegheny Mountains. Hayes Large has offices in Pittsburgh, Cleveland, Harrisburg, PA., and State College, PA.; however, the majority of its 130 employees work in Altoona due to its high quality of life, low cost of living and proximity to many major northeast cities and tourism attractions. Managing Partner J. Richard Fruth values the small town feel of the area and sees it as appealing to individuals seeking an alternative to the big city lifestyle.

An award-winning firm, Hayes Large provides a full range of services including master planning, programming, architecture, interior design, landscape architecture, engineering and construction administration. Hayes Large specializes in educational, healthcare, religious, and government facilities.

Holmes & Narver Inc.

The employment needs of Holmes & Narver reflect the changes in the firm's project orientation. Long involved in the architectural and engineering design, field inspection and construction management of government and

FACULTY POSITION: UNIVERSITY OF CALIFORNIA, BERKELEY DEPARTMENT OF ARCHITECTURE

Construction, Structures & Design

The Department of Architecture at UC Berkeley is seeking applications for the first in a series of regular and adjunct positions to be filled during the next several years. These will include faculty who teach courses in design, structures, building construction and the exploration of material choices. These faculty will be charged with clarifying and reinforcing the conceptual links between design, building production and the quality of the environment. They will provide students with a fundamental grounding in the logic, craft, and procedures of building and integrate them with the fundamental strategies of architectural design and the creation of satisfying places.

Successful candidates will be able to teach and do research in one of the principal areas of concentration:

- Exploration of construction materials, their joining, positioning, assembly and performance, with an emphasis on the foundations of material understanding and its role in design.
- "Tectonics" – the interrelationship between architectural form, structural configuration and the materials and processes of construction.

These will contribute to a developing curricular context that considers the full range of experiential, environmental and resource implications resulting from differing systems of design and implementation.

Faculty in these positions will be expected to be able to integrate design and construction and to teach in studio, workshop, seminar and lecture formats, as well as to conduct field tests and demonstrations.

At least one, possibly two, appointments are anticipated for the fall of 2000, followed by others in subsequent years, or by related adjunct positions. This is an open search and appointments may be made at rank and tenure status appropriate to the candidates' qualifications. Candidates should have a Master of Architecture and advanced qualifications (M.S. , Ph.D. or special experience) in the field and/or related disciplines.

Send a brief statement of interest, curriculum vitae and the names and addresses of three potential references to Charles C. Benton, Chair, Department of Architecture, 232 Wurster Hall, UC Berkeley, Berkeley, CA 94720-1800. Applications must be postmarked no later than January 18, 2000.

The University of California, Berkeley, is an Equal Opportunity, Affirmative Action Employer.

PROFILES

constructional facilities, the firm recently has expanded into the themed entertainment and retail and commercial arena. As a result it is seeking architects with more refined design capabilities, yet the firm still highly value good technical skills.

Holmes & Narver believes in providing challenging "career growth opportunities" to its employees, says Bill Keene, Manager of Architecture, in an effort to retain the most talented architects. "We believe that dedicated and talented employees are our most valued resource," Keene adds.

Because of its close proximity to Cal Poly, Holmes & Narver continually receives interns from the university. Keene finds the young architects well trained in basic construction techniques, design, and presentation skills.

URS CORPORATION

A full-service, global architectural/engineering firm, URS CORPORATION has been ranked as the largest "pure" design firm in the United States by Engineering News-Record. URS is a publicly owned organization with a network of offices worldwide.

The firm is known for its distinctive architectural design of showcase facilities that win awards and reflect the client's vision and concerns. Through these stellar projects, URS offers a wealth of diverse opportunities for its architectural employees.

"Placing a high value on the success of both clients and employees," says Jacquie Sunde, Director of Staffing and Mobility, "is what makes a large firm like URS successful. We measure the success of our employee programs and work environment by whether our clients believe we provide quality service. That tells us if we're doing a good job of hiring and retaining quality people."

With comprehensive services ranging from conceptual design to construction management, the scope of URS projects include educational, correctional and judicial facilities; healthcare; corporate and industrial complexes; multi-use/entertainment centers; and public buildings.

CHAIR

Department of Architecture Cornell University

The Department of Architecture in the College of Architecture, Art, and Planning at Cornell University invites nominations and applications for the position of Chairperson. This is a tenured appointment at the appropriate rank, to start July 1, 2000.

Cornell University's Department of Architecture offers a five-year, first professional degree program at the undergraduate level as well as programs at the master's level in architectural design, urban design, and computer graphics and at the master and doctoral levels in the history of architecture and urbanism.

Nominations and/or letters of application with curriculum vitae should be sent to:

Professor Andrea Simitch
Chair Search Committee
Department of Architecture
143 East Sibley Hall
Cornell University
Ithaca, NY 14853-6701

Review of applications is expected begin on November 1, 1999.

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CORNELL ARCHITECTURE

Assistant or Associate Professor of Architectural Technology

The Department of Architecture at Cornell University invites applications for a tenure-track position in architectural technology (environmental controls). Candidates must be able to teach in the following areas: lighting, acoustics, passive solar, and mechanical systems. In addition to teaching required undergraduate courses in the areas listed above, the position requires developing and teaching advanced elective courses in related areas; serving on undergraduate and graduate thesis committees; participating in design studio reviews; research/scholarly work; and administrative committee responsibilities. Candidates will be evaluated according to the following criteria: previous teaching experience, professional and/or advanced degrees at the graduate level, professional experience in the areas listed above, and research/scholarly work. Screening of applications will begin November 15, 1999 and will continue until the position is filled. The appointment is expected to begin Fall 2000. Submit letter of application including a brief statement outlining your teaching and research/scholarship objectives, a curriculum vitae, and contact data for three references to: Architectural Technology Search Committee, Department of Architecture 143 East Sibley Hall, Cornell University, Ithaca, NY 14853-6701. Cornell University is an Equal Opportunity/ Affirmative Action Employer.

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ARCHITECTS NEEDED!

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THE FUTURE Architects should be aware of the benefits and solutions FRP composites offer.

BY DOUGLAS S. BARNO

Imagine a new family of engineering materials that are stronger than steel, lighter than aluminum, easily formed into complex and dramatic shapes, maintenance-free for decades, and reduce labor and installation costs. Sound too good to be true? Fiber-reinforced polymer (FRP) composites have been making steady gains in new building and civil engineering applications since the 1970s. FRP composites are a class of materials in which a polymeric matrix (usually a high-performance thermosetting resin) is reinforced with high-strength fibers (glass, carbon, aramid, etc.), similar to the way steel rebar reinforces concrete. Yet, few architects seem to be aware of the available FRP composite products and their many benefits.

Mighty material, minimal cost

In addition to the advantages of strength, weight, and design flexibility, FRP composites provide high dielectric strength and corrosion resistance, as well as low product or tooling costs. Some of the latest FRP composite applications include the development of composite rebars and tendons for reinforcing and prestressing/posttensioning concrete. FRP composites are also used on exteriors to repair and strengthen concrete columns, beams, and decks as well as to repair and upgrade above-ground and below-grade masonry walls.

In 1997, Construction Technology Inc. completed a renovation of a 190-foot-long-by-17-foot-high FRP composite rebar-reinforced seawall for the former Kennedy family estate on the Atlantic Ocean in Palm Beach (center). The overall job cost was competitive with steel, but the service life of the structure is expected to be decades versus the five- to seven-year maintenance cycle of a traditional steel-reinforced concrete seawall.

FRP composites used for reinforcing concrete eliminate problems associated with rust stains, as well as spalling from corrosion or inadequate cover. In coastal areas where exposure to marine salts can be harsh, using FRP composite rebar in architectural elements—such as balusters, column facades, cast stone, cladding, window lintels, and brackets—significantly increases the service life of structural components. Problems of steel corrosion have focused new interest on the benefits of FRP composite rebar in architectural concrete elements. The material is being used to restore and repair balconies on apartments and condominiums in coastal areas in applications where typically thin concrete elements are exposed to chlorides on two surfaces.

Other architectural applications along the coastline include the minarets and fascia at the Trump Taj Mahal in Atlantic City (top right). Fabricated of a special fire-retardant thermosetting resin and glass fiber reinforcements, these exterior parts range in size from a 50-by-29-foot dome structure to a 1.5-inch diameter miniature rosette. These architectural details were designed to withstand decades of exposure to sunlight, salt spray, air pollution, and hurricane winds. Surprisingly, much of the Victorian architectural fascia and details in service since the early 1970s on Main Street at Walt Disney World outside Orlando use FRP composites.

Not just for the salt air

FRP composites are also being combined with traditional building materials, such as glulam beams, I-Joists, and wooden building panels, to create new forms of engineered wood products with higher strength, lighter weight, and better resistance to natural hazards such as wind and earthquakes. Recently, APA, the Engineered Wood Association, the Advanced Engineered Wood Center at the University of Maine, the U.S. Forest Service Forest Products Laboratory, and the Market Development Alliance of the FRP Composites Industry have signed an agreement that creates a four-way research and development consortium to develop, demonstrate, and commercialize new FRP composite engineered wood products for the building industry.

Looking worldwide, in Japan, architects and engineers routinely use FRP composite reinforcements, panels, and external strengthening to meet seismic building requirements. At the "Eyecatcher," a five-story building in Basel, Switzerland, FRP composites are used in an integrated system of structural framing profiles and facade panels. The design provides state-of-the-art energy-saving technologies (solar cells, solar heating, heat recirculation, etc.) that improve acoustical performance, require little maintenance, and have a striking look. Since its opening in February 1999, the Eyecatcher has received more than 20,000 visitors.

U.S. leads the way

While Europe, Japan, and Canada are all active in developing niche applications for FRP composites, the U.S. has emerged with a commanding lead in R&D and the widespread commercialization of FRP products. Already, researchers are focusing on a new generation of structural framing systems that use FRP composites to snap together, reducing time and labor costs while improving structural performance. Also promising for natural-disaster-resistant building methods are FRP composites developed for ballistic armor in military applications, because as the U.S. has witnessed too often, a hurricane or an earthquake can render as devastating structural damage and financial loss as any man-made war. ■

Douglas Barno has more than 35 years' experience in the composites industry in the U.S., Europe, Middle East, and Africa.

The Next Generation

by Charlie White, AIA

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Harriman Associates and the J.J. Nissen Bakery project were spotlighted in the October 1999 issue of CADALYST magazine.

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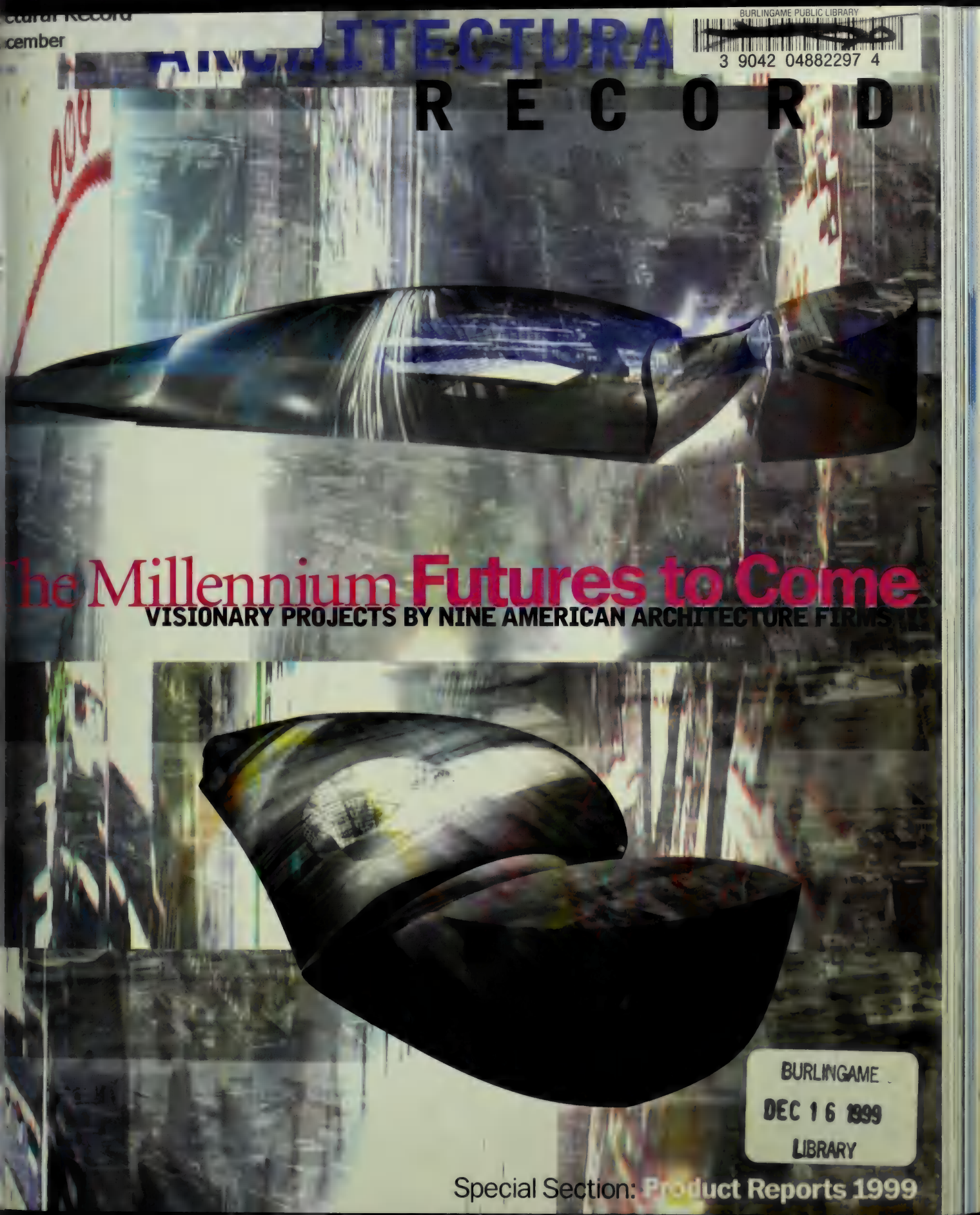

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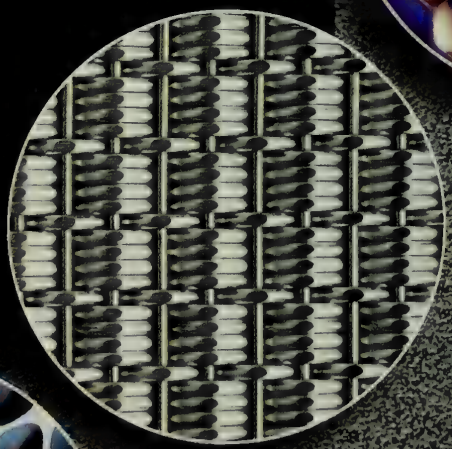

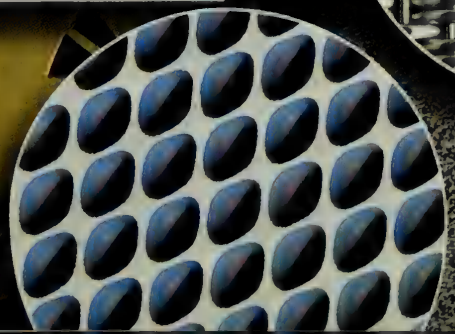

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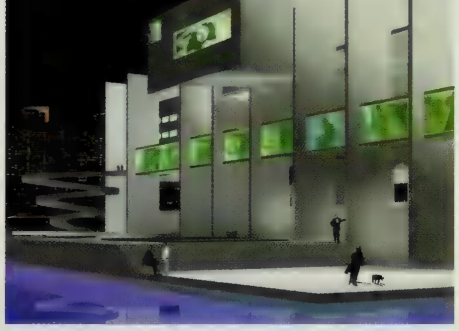

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The AIA/ARCHITECTURAL RECORD continuing-education opportunities are "Giving Back to the Environment" [page 199] and "Finishing Outside Walls With Ceramic Tile" [page 212], sponsored by the Italian Trade Commission.

Cover: *Context studies of the Museum of Technology Culture, New York, by Asymptote Architecture.*
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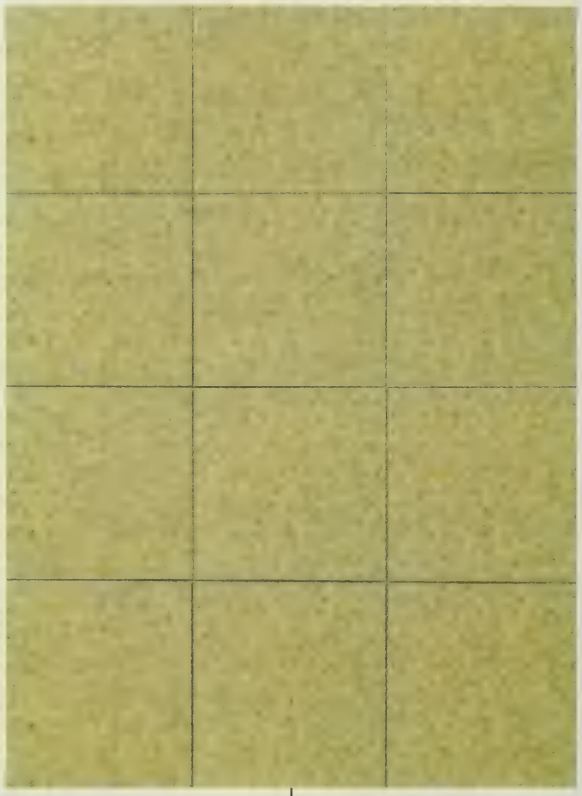

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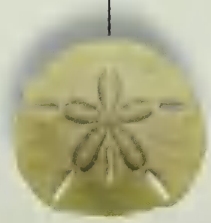

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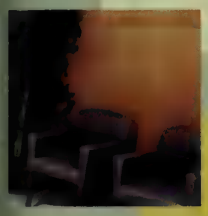

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EDITORIAL OFFICES: 212/904-2594 Editorial fax: 212/904-4256 E-mail: *rivy@mcgraw-hill.com*
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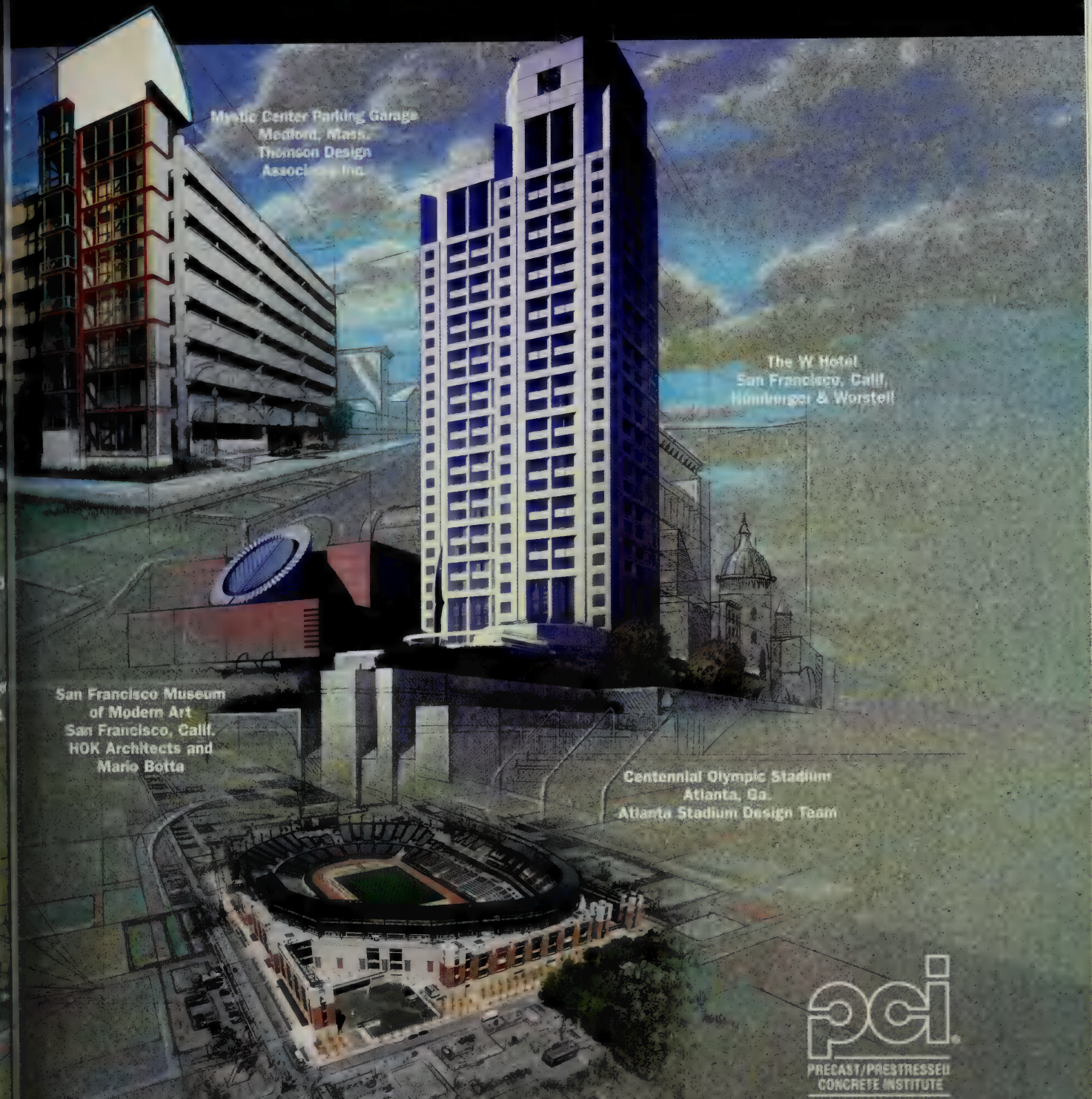

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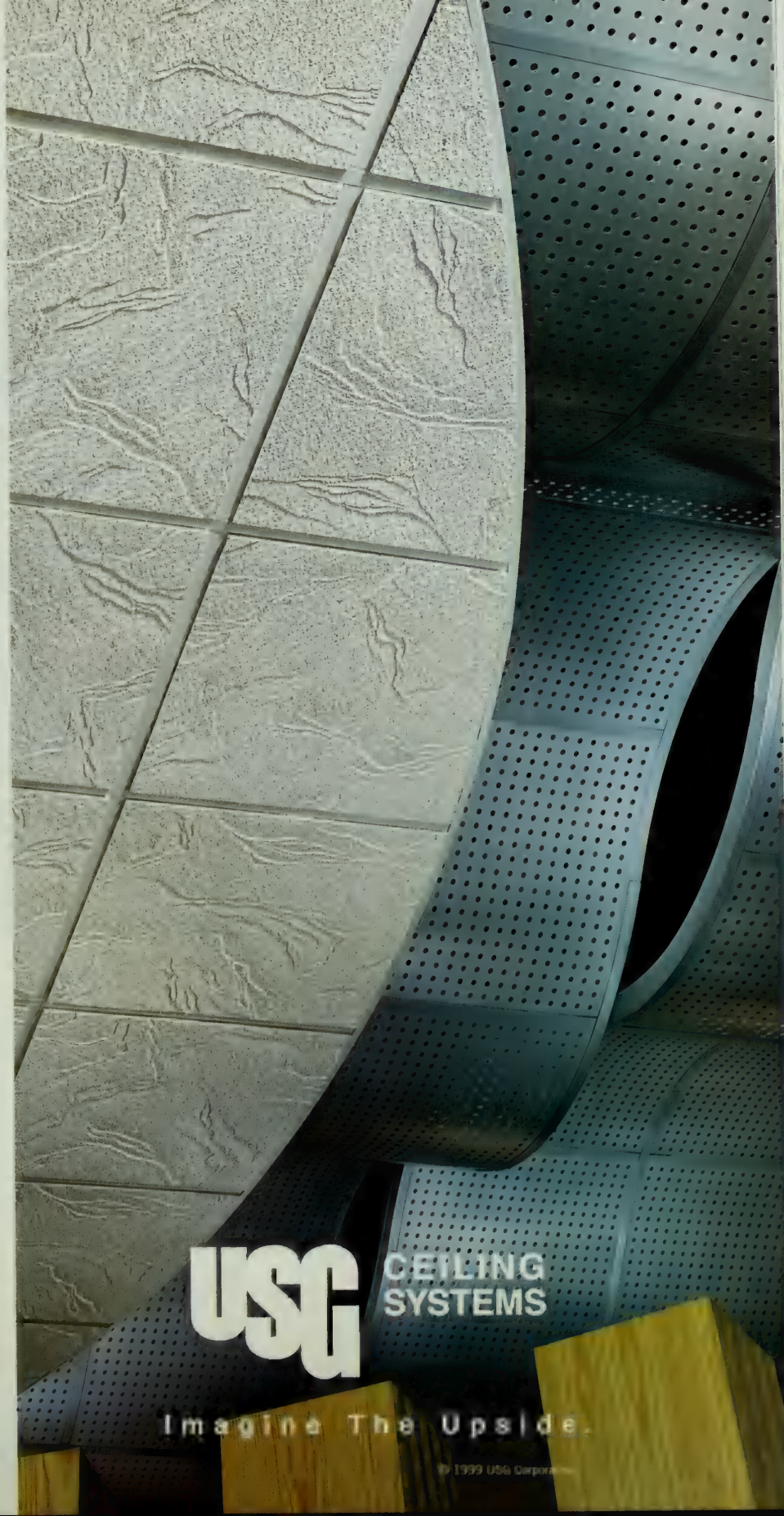

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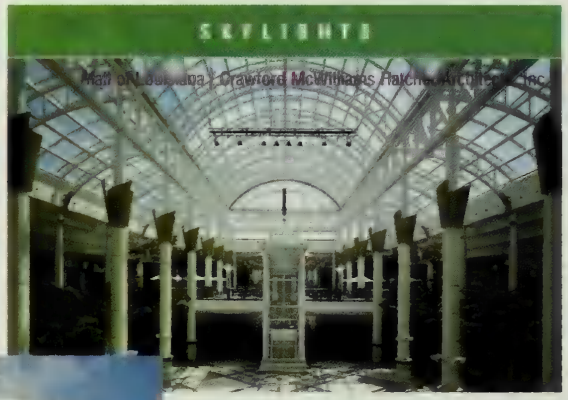

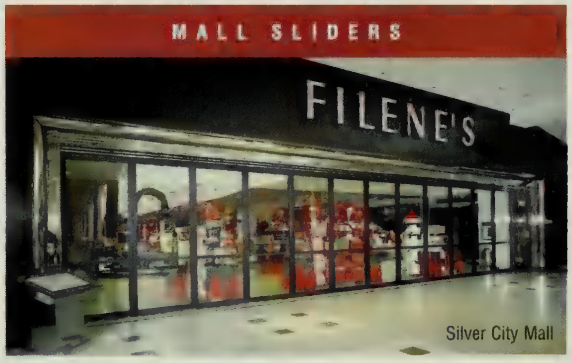

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CIRCLE 9 ON INQUIRY CARD

EDITORIAL

Oh, Brave New World!

BY ROBERT A. IVY, FAIA

This is an oxygenated moment. For architects, December 1999 feels energized, much like a swimmer who takes a final gulp of air, then plunges headlong into a 50-meter pool: there are rigorous laps ahead, but the leap is exhilarating and filled with promise—more of a beginning than an arbitrary ending in time.

That sense of released tension, of unleashed intellectual and intuitive energies, characterizes the nine visionary projects we present at the turn of the millennium. There is an immediacy to the ideas you will encounter in the following pages, as if thought and imagination had literally been translated from the mind of the makers or as if the electrical impulses of the human brain had been transferred onto ink and paper. Thought literally becomes data here, which glitters and shines with a two-dimensional, spectral power.

One fact is clear: The digital revolution is affecting not only the way we produce working drawings, but also the way we think about architecture. Such expressionistic, neobaroque forms would have been unthinkable without higher technology, which allows for customization at a massive scale. Three-dimensional computation extends the architect's range, permitting a wealth of experimentation not seen since the ages of Francesco Borromini or Eric Mendelsohn. Any form seems possible; the architectural language, fluid and light. Oh, Brave New World!

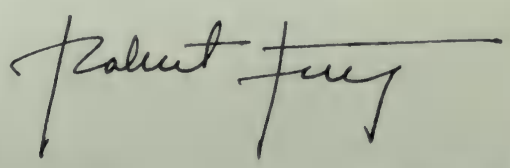
Underlying the seductive plastic imagery of the nine, however, lies a converging world of thought. Genetics, social sciences, and structure all are evolving through the architects' eyes and seeking expression in built form. Observe how Kolatan/Mac Donald's residential tower blossoms with biological force; Krueck & Sexton's urban tower extends the range of the structural exoskeleton; and Mockbee/Coker's city hall recasts a familiar societal building type. Despite an apparent consonance in the formal expressions, the actual ideas vary radically. All declare the centrality of architecture as cultural interface—the bridge between thought and reality.

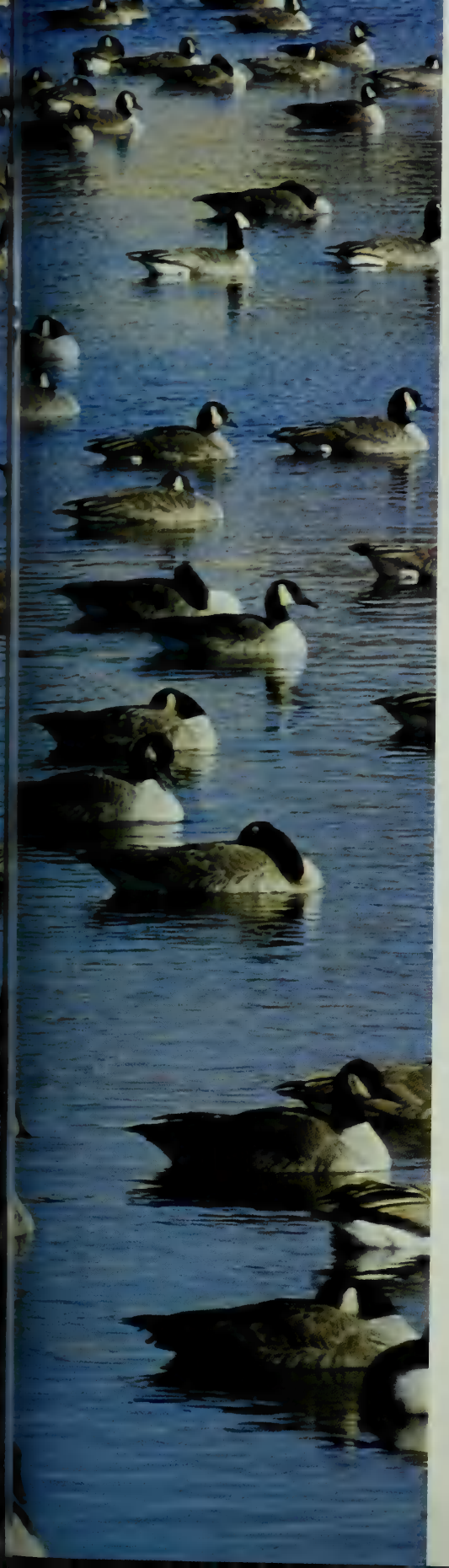
Do these projects add up to "e-topia," an interconnected and plugged-in, polycentric universe described by MIT Dean William Mitchell in his latest book, E-topia: Urban life, Jim—but not as we know it? *If so, it seems a decidedly urbane and somewhat cool place to these architects, transformed and dominated by the power of the electronic image, which flashes across building facades and as quickly disappears. For our contributors, the new city appears both permanent and transient, a high-wattage megaworld with foundations both in bedrock and in the imagination. Buckminster Fuller, meet Carl Jung.*

Who dreamed up this fantastic assemblage? Flesh and blood. ARCHITECTURAL RECORD *thanks the architects who enthusiastically produced the work that fills this issue. Not only did they extend their own creative boundaries with each individual effort, but they also engaged others at the task, including structural engineers, consultants, and colleagues.*

Critic Kurt Andersen summed up a world of ideas with wit and insight. Special correspondent Suzanne Stephens conceived the topic and pushed it through with the force of nature; senior editor Clifford Pearson acted as editorial linchpin, ensuring that the ambitious work came together for publication; and senior editor Sarah Amelar rounded out the editorial team. Art director Anna Schlesinger gave the diverse projects a coherent, compelling presentation. Everyone on staff is excited about the result.

If you wonder what the future holds for us all, open the pages and see for yourself. Projects from New York to California, crackling with energy, await your inspection. Take a deep breath. Plunge into the 21st century.





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CIRCLE 11 ON INQUIRY CARD

LETTERS

The kids are alright

As founder of the Architecture Career Help (ARCH) Network, a group of professionals who support and assist architecture students with career development and job searches, I wish to respond to your October 1999 editorial [Lost in Space, page 15].

You wrote: "New graduates face [career choices] . . . armed with too little information and support." Too little information! How about too much information. The Internet makes obtaining information on graduate schools, firms, jobs, career information, etc., just a few keystrokes away. And there is plenty of "support" in the form of faculty, staff, and career services offices. Students don't want "support" or assistance. What they lack is time!

You wrote: "Schools of architecture should take some of the heat." In my professional lifetime (15 years), schools always get the heat; firms and architects receive little. Again, very few firms support professional development, and many don't even know what IDP is. I suggest you survey architectural educators on how well firms prepare interns for licensure.

You wrote: "Very few schools offer extensive work/study programs." What constitutes "few"? Many schools require work experience for graduation, and many others have optional programs: Drury College, Rice University, University of Detroit-Mercy, North Carolina State University, University of Arkansas, Mississippi State University, Illinois Institute of Technology, Boston Architectural Center, Pomona, and Montana State University, to name a few.

You wrote: "Very few schools offer . . . active job placement." And you are correct; most schools offer more in the form of career development. After reading your editorial, I E-mailed members of the ARCH Network (150 strong—representing more than 80 accredited programs) to find out what schools of architecture are doing for students and graduates. The numerous responses proved that they were doing a lot.

Every school I know has a centralized career center; granted they may not have firms on campus to recruit, but their mission is to help students with their post-graduation plans. Again, most students do not take advantage of these services.

You wrote: "Practicing architects don't get off the hook." Not only practicing architects, but also chapters of the AIA. I have been surveying AIA chapters about programs and services they offer high school students, architecture students, and interns, and I am surprised to see the minimal effort put forward.

In many respects, I agree with the title of your editorial, "Lost in Space," but many students/recent graduates are in this "wasteland" by choice, not because schools or firms are failing them.

I challenge you to use your influence and highlight what schools and firms are doing to help students get licensed. Also, I encourage you to cover the planned October 2000 conference "Alternative Careers in Architecture," sponsored by the AIA Educators & Practitioners Network.

—*Lee W. Waldrep*
Assistant Dean for Academic Affairs
College of Architecture
Illinois Institute of Technology

Editor in chief Robert Ivy responds: I appreciate the points Mr. Waldrep brings up in his letter. There are organizations and schools attempting to bridge the gap between education and practice. Still, I stand by my assertion that not enough schools are successfully accomplishing this task. The bottom line: Interns need and deserve better information, more guidance, and more cooperation between the practice and educational communities.

Aynnie get your gun

Thank you for the fascinating article on the abandonment of social agenda in much of contemporary architecture in the U.S. [Critique, October, page 49]. At first, I was deeply angered by Robert Benson's assertions that U.S. architecture generally lacks an attitude, or "social or political agenda," diluting its merit as art. It seemed Benson was goading designers toward a balkanized aesthetic, which could only pass muster if infused with moralistic ideals. Ayn Rand would've loved this: a world where slightly wonky design is excused because the architect's heart was in the right place, or where inspiration resulting from some galvanizing societal ideal is the only valid work.

As I read on, however, I began to realize the irony in Benson's words. An agenda concerned merely with design freedom may not always produce satisfactory results. That's too bad, but far better than a single-minded aesthetic imposed from without by the socio-political style police. Thankfully, architecture outlives all socio-political agendas and reveals the vanity of them all.

—Chris Williams
Glastonbury, Conn.

Why young architects are leaving

I want to congratulate your staff for another brilliant article [the Fee Dilemma Part 1, October, page 110]. It's nice to see the magazine paying more attention to educating practitioners about the needs of today's marketplace, but I am afraid that it is too late for the "lost generation."

As a 33-year-old architect with 12 years' experience (all on CAD), I have watched with dismay the piecemeal evacuation of talent from the profession. Abysmal salaries and commodified operations have forced the profession into a downward spiral, and the word is out: Architecture is fun to study, but lousy to practice.

I have worked on projects around the world, but to see a superstar architect on the verge of a breakdown after firing a few hundred people is to see a future with little hope of financial stability or ease. We all went through the early '90s, and many talented young people left to use their creative skills elsewhere.

The shock of recession has caused the older staff to further protect themselves, but at a great cost; IDP is all but dead in practice, and the goal is to hire CAD drafters as cheaply as possible, even resorting to foreign workers (now more than ever) to keep costs low. They have no choice, because they rarely have the ability to negotiate worthy fees in advance. I just worked on a project that will net the developers $100 million; I hope, but doubt, that the architect, an AIA fellow, can break even.

My response is simple: I am working on an MBA at night. Because architects are often just a line item on the spreadsheet, I plan to formulate those spreadsheets. This is not the glorious design work I have been so fortunate to do thus far in my career, but it is probably the best way to assure that good buildings get built.

I have a long-standing rule about great architects: They all have two things: Beautiful wives (or husbands?) and bankruptcy court. I hope that designers of my generation are able to prove me wrong.

—Bryan Winter, AIA
Via E-mail

Corrections

The name of Alfred P. West, a Business Week/Architectural Record awards juror was unintentionally dropped from our listing [October, page 85]. West is chairman and CEO of SEI Investments, Oaks, Pa. RECORD regrets the error. ■

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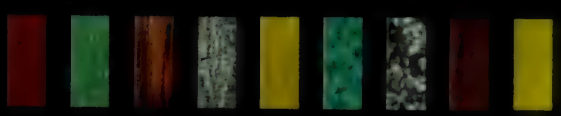

CIRCLE 12 ON INQUIRY CARD

SPEAK OUT Those who plan the cities of the 21st century should throw out the old urban guidelines and try a new set.

BY CARL PUCCI

Carl Pucci is a founder and principal of the New York City architecture firm BumpZoid. This article is adapted from the O Zone Manifest O (New Jerk City), prepared by Team Zoid (Carl Pucci, Sebastion Pugliese, Luigi Fiorentino, Carlos Arnaiz, James V. Righter, and Mark Righter).

New York, like many large cities, seems intent on abandoning its birthrights by ceding control of its natural resources, its planning abilities, its singularity, and the very air we breathe in favor of short-term interests and dubious accounting.

Natural resources are seen merely as development opportunities (e.g., seaport malls). The city is seen only as a workplace for corporate interests. Public planning has deteriorated into continuous zoning negotiation. Our cities swap one piece of public property for the short-term maintenance of another. Construction is subject to hundreds of district restrictions, yet there is no official advocate for public areas, new parks, or unbuilt spaces. Public improvements are somehow required to generate self-support, while the direct benefits to the private sector are ignored. There is no vision of a city of vital neighborhoods and coordinated regional development of resources, and no stomach for making land-use decisions that might inconvenience private interests.

It is time to change the process. In New York, some had high hopes that the Canadian Centre for Architecture idea competition for an underused part of Manhattan [August, page 53] would not be a beauty contest of star architects and individual creations. Unfortunately, the organizers missed an opportunity to address urgent urban issues. We propose that all involved in planning the cities of the next century use a new set of urban guidelines:

Increase the void amid density. Our cities need more open space and must redirect their energies to public priorities. Manufacturing zones are under pressure to be rezoned for residential and commercial development. Among planners, housing supporters, and developers, we have no advocates for public open space. Open-space zoning must become an essential ingredient of rezoning. The void is not an open plaza among office buildings; it is the vital lung and heart of a neighborhood.

Natural resources are public resources. Natural resources, be they waterfronts, scenic vistas, parklands, or cultural heritage sites, must be vigorously protected and used as public amenities. Large public recreation areas for both active and passive use must be developed via regional coordination and be available within walking distance of all neighborhoods. They must be supported by public funds, and they must be dependent on retail and corporate interests.

Infrastructure first, buildings second. Public rights-of-way must take precedence over private property. Pedestrian rights-of-way must take precedence over vehicular traffic. Public transportation is to be immediately available to every area and connect directly to regional transportation. The distribution of the civic network of medical, education, social, and cultural programs needs to be equitable throughout the city. Local facilities (clinics, grade schools, social services, recycling centers) should be required in every neighborhood. The systems need to be accessible and governed at the neighborhood level, while coordinated regionally.

Flexibility takes precedence over specificity. Throw out the zoning codes, and replace them with simple performance criteria. Essentially, citizens should be able to do as they please as long as they don't subject others to obnoxious noise, odors, or inconvenience. Buildings should be hybrids capable of supporting multiple uses. They may take any style or shape as long as they respect a few urban civilities, like the primacy of the street grid, the neighborhood context, and the need to share air and daylight.

Respect the past and anticipate the future. We need to know the past and respect it—not glorify it. We need not tie ourselves to land-use policies that no longer represent public interests. Our work should anticipate the future. Plan as if each building may be part of a new city some day, somehow.

Our cities deserve more: more public spaces; more light and air; more convenience; more collisions of culture, use, and history; and more delight. We demand it. ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk) to Speak Out, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.architecturalrecord.com and clicking on Mentors. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive text approval.*

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CIRCLE 13 ON INQUIRY CARD
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MENTORS An architectural veteran predicts the trends and topics that will affect the next century's practitioners.

BY R. RANDALL VOSBECK, FAIA

R. Randall Vosbeck, FAIA, is a former president of the AIA, a former principal at VVKR in Alexandria, Va., and a former vice president of DMJM. He is now retired from practice and lives in Vail, Colo., where he does architectural consulting work.

As the turn of the century looms and millennial prognostications abound, architects are concerned about the future of their profession. The architect's role in the construction process changes from day to day, digital technology is overturning traditional design methods, and securing fees in an increasingly competitive market continues to be a challenge. To illuminate some of these issues and to provide a perspective on the important trends of the coming years, RECORD *asked former AIA president R. Randall Vosbeck for his take on an industry in flux.*

Dramatic changes are afoot in our profession. Technological advances are altering the buildings we design and how we design them, and changes in the worldwide economy and evolving social issues are also impacting our profession. Clients are more sophisticated and expect perfection, public interest in quality design is expanding, competition is fierce from outside the profession, liability concerns affect our design process, and financial rewards for many architects have not kept pace with the responsibilities we carry.

Therefore, as we look to the 21st century, many questions arise. Will the architectural profession as we know it survive? How must it adapt and adjust? What will the built environment be like? Over the last 10 years or so, the AIA has conducted considerable research to investigate trends that might affect our profession; much of what is contained herein is based on that research.

To begin with, there are some near-term developments that must be taken into account:

- Buildings will be much more specifically adapted to the climate and resources of the region in which they are built.
- Biotechnology disposal will eliminate the need for plumbing pipes for waste.
- Recycling technologies will revolutionize waste treatment, air and water purification, and energy production.
- Photonics, lasers, masers, and fiber optics will replace electrical wiring.
- Fossil-fuel energy will be nonexistent, and new energy will be endless, cheap, and stored within superconductive ceramics.
- Computers reacting to the spoken word will be used throughout the built environment.
- Wall membranes will be able to store and transmit light and heat.
- Sunlight will be collected and transmitted over fiber-optic cables to the building interior.
- Genetically engineered microorganisms will be used to manufacture high-strength building materials.

We must incorporate these changes into our practices. But many broader issues and trends must also be understood. A host of societal problems—the most obvious of which are poverty and terrorism—are having an increased impact on the built environment. The cause of many social concerns has to do with the expansion and deterioration of major urban areas around the globe; our cities are struggling to serve a vast influx of people with quality housing, employment, education, culture, recreation, health care, and safety.

An altered landscape

The need to repair decaying infrastructure and to renovate our cities in a way that is humane and sensitive to human needs is a major challenge for architects, planners, and politicians. The problems of suburban sprawl—traffic congestion, building and maintaining adequate utility infrastructure, and environments unfriendly to pedestrians—will create a backlash against unrestrained growth. Many people will look to less crowded alternatives, giving rise to rural population centers. Families attracted by rural values and corporations interested in low land and labor costs will move to outlying areas. Sophisticated information technology will assure that the need to communicate efficiently will not deter this kind of development. Just as the Industrial Age spawned cities, the Information Age may decentralize them. This trend can be reversed, but it will require action.

Economic trends are also leading to significant changes in architecture. Because a nation's economy has a profound effect on its buildings, increasing globalization presents both opportunities and pitfalls. Imbalances in foreign trade, the Third World debt, and the unavailability of energy could threaten the benefits that have accrued from an integrated world economy. Major demographic shifts such as slowed population growth, more women in the work-

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CIRCLE 14 ON INQUIRY CARD

force, a shrinking middle class, an aging population, increased immigration, and a decline in the formation of households will have an impact on how and where we live and work.

Green essentials

Worsening environmental conditions, spurred by increased population densities, deforestation, global warming, and fossil fuels, will create a sense of urgency. Concerns about air and water pollution, solid-waste reduction, prevention of ocean dumping, control of toxic wastes, depletion of the ozone layer, and the preservation of coastlines will play a role in architecture and planning. The built environment consumes nearly half of all energy used in the world, so energy conservation through building design will intensify. The era of using fossil fuels as the primary energy source is ending; society will make a historic energy transition that will have a profound impact on architecture.

Redefining roles

Architects will face a continued erosion of their status as "master builders" and must contend with challenges from nontraditional competitors and losing their role as the leader of the design and building processes. Much more specialization will occur throughout the profession, and architectural education must adapt accordingly. Just as specialization has taken over the medical profession, architects will be trained to handle specific aspects of the profession, such as a particular building type or the technical aspects of the design process. For architecture firms—large or small—to be competitive, they must find a "service niche" and search for ways to be useful far beyond the traditional design services offered today. Many firms will create opportunities in predesign services, construction and economic planning, program management, facility management, real estate, and perhaps even financing.

The demands of clients for increased quality and perfection will lead to elaborate quality-control systems. Documents will be produced by enhanced, interactive "expert systems," which will solve problems using a computer model of human reasoning. Expert systems will thoroughly analyze, review, and check construction documents for accuracy, conflicts, completeness, and constructibility.

Embrace the changes

Firms looking to succeed in the 21st century should heed management guru Peter Drucker, who said, "It is all the more important for an existing business to commit itself to the systematic abandonment of yesterday if it wants to be able to create tomorrow."

Because architecture is the most public of the arts and plays an important role in molding the lives of citizens, it is vital that the architectural profession respond energetically to the forces of change and meet the critical test of producing designs that serve people and society with sensitivity and compassion. It's one thing to create new structures and rebuild our urban centers, but if our design work doesn't inspire people and consider their needs, desires, and aspirations, it will surely fail.

The ultimate goal for all of us in architecture is to take action and adapt to change, assume broader responsibilities, reverse negative trends, and become better prepared to create an enhanced built environment to serve the ever-evolving needs of humankind. ■

Questions: *If you have comments about your career, professional ethics, the law, or any other facet of architecture, design, and construction, send submissions: by mail to Mentors, Architectural Record, Two Penn Plaza, Ninth Floor, New York, N.Y. 10121; fax 212/904-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

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CIRCLE 15 ON INQUIRY CARD

PULSE RECORD readers were asked: In an era of prosperity, have architects abandoned social responsibility?

No. Many architects donate their services and time to worthy causes. Sadly, however, these generous acts are rarely covered by the media.
—Elmer Chase
Montpelier, Vt.

More answers to: Have architectural fees kept pace with the increasing costs of personnel and technology?

No. The adage "there are no small jobs, just small fees" is representative of the condition faced by many practitioners. Client expectations of services and demands for time and attention often result in fees that are barely adequate, let alone profitable. Many firms feel charging fees at an hourly rate will overcome the problem. This approach, in lieu of the fixed fee for clearly defined services, creates limited profitability and minimizes the incentive to be efficient and succinct.
—Judson A. Kline, AIA
Herschman Architects Inc.
Cleveland

More answers to: Should architects be more political?

Yes. I am for more political involvement from everyone, but against more political involvement from special interest groups (like the AIA). I am a member of the AIA and I am very opinionated politically. However, I feel people should organize for political reform based on their ideology, not their profession.
—Kevin M. Harper, AIA
Director of Marketing
TheDesignNetwork.com
Tustin, Calif.

Yes. Although I am not an architect (I have a master's degree in urban design), I believe architects must be more involved in the political process. Most architects are keen observers of the urban form and have plenty of insight to offer. However, too many architects spend too much time on the drawing board (or CAD station) and not enough time involving themselves in key political decisions that affect the construction industry. After all, wasn't Thomas Jefferson a trained architect?
—John Gracey
Construction News Reporter
F. W. Dodge
Vancouver, British Columbia

Yes. I think that it is normal to be politically active and to participate in our future and in the decisions of politicians.

I am an architect and was state deputy of Amazonas in Brazil. I made the decision to participate in the political process. I think it's the right decision.
—Miguel Capobiango
Manaus, Amazonas, Brazil

Yes. Without doubt, we should be not only more political but also more proactive. If we continue to allow ourselves to be engaged only after all the key decisions are made, our profession's loss of influence and respect will continue to slide. We must take the stance—and be able to back it up—that we are the source for knowledge and creative solutions. For our knowledge to be of real use, it must be part of the up-front planning, not just the cosmetic appearance factor added at the end.
—Ronald M. Reim, AIA
Executive Vice President
Oculus Inc.
St. Louis

Yes. The phrasing of the question makes one think that architects aren't involved in any political decision making because they haven't been invited to participate. Architects should be able to voice an opinion, but their opinions are often ignored until a point where what they say makes little difference. The endorsement of candidate(s) usually involves macro-oriented justification of "why" more often than "how," leading me to believe that architects themselves may not want to be involved in the first place.
—Marc Bertolino
Project Designer
HOK Sport
Kansas City, Mo.

Yes. For architects to sit on the sidelines deprives the community of a great resource concerning human development and accomplishment. Being involved is a privilege many have and certainly will die for. We should provide leadership in the one place where it is sorely needed, politics.
—Douglas E. Helms
Mobile, Ala.

Yes. Architects should not be more political; they should be more public. I've spent about 20 out of 30 years as an architect working in the public sector at national and local levels, both domestic and foreign. Politics are like war, and as in war, the first casualty is truth. Politicians must "spin" the truth, i.e., lie. We need always to take our case to the public, not to politics.
—Peter Newell McBurney
Kuwait City, Kuwait

This Month's Question

What building types will dominate the architectural landscape in the next century?

For more than 50 years, RECORD has run a section called Building Types Study, presenting comparative reviews of prominent building types, from schools to hospitals to entertainment facilities [page 131]. Which building types do you foresee as being the most important in the coming century?

Fax your response to ARCHITECTURAL RECORD, 212/904-4256, or visit www.architecturalrecord.com and click on Letters to voice your opinion by E-mail.

Note: *Pulse reflects individual responses to each month's question and is not meant to be construed as formal research.*

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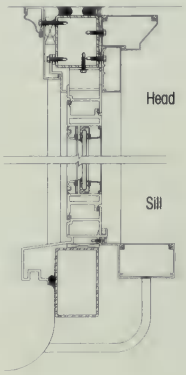

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CRITIQUE Sprawl has everyone scared, but the 21st century will likely see re-urbanization, not more diffusion.

BY ROBERT FISHMAN

A century ago, the English author H.G. Wells interrupted work on such pioneering science fiction as *War of the Worlds* and *The Time Machine* to write a brief article predicting the future of London and other major cities. *The Probable Diffusion of Great Cities* (1900) would prove eerily prophetic of the fate of the 20th-century metropolis. If we wish to understand the likely future of our own 21st-century cities, we might start by reexamining this remarkable prediction.

In 1900, a sense of crisis was provoked by the rapid growth of huge cities whose populations and densities vastly exceeded all historical precedents. Reformers feared that London, New York, Chicago, Berlin, and the other giant "whirlpool cities" (Wells' term) would suck the life out of rural areas and small towns and concentrate the human resources of a nation precisely in those inhumanly crowded vortexes where the physical, economic, social, and moral health of the nation would be destroyed.

Wells was perhaps the first to understand that the era of the whirlpool cities was drawing to a close. Nineteenth-century technology, he wrote, especially the railroad, had concentrated vast populations at those few favored spots where multiple rail lines converged on deep-water ports. But if 19th-century technology meant concentration, 20th-century technology would promote diffusion.

Robert Fishman, professor of history at Rutgers, is the author of Bourgeois Utopias: The Rise and Fall of Suburbia.

Wells understood that the coming revolutions in transportation and communication would disperse urban economic and social functions throughout vast regions. An advanced society would no longer need urban concentration to maintain complexity. As the city spread into the countryside, the traditional distinction between town and country would cease to apply. Instead, both would be swallowed up in an "urban region." The word "city," Wells predicted, would soon be as obsolete as the word "mailcoach."

Many cities are reviving their downtowns and waterfronts. Waterplace Cove Basin in Providence (above) was designed by William D. Warner Architects and Planners as part of the city's "river relocation project."

A seer of sprawl

At the moment when the dense, centralized whirlpool cities seemed all powerful, Wells foresaw that the city itself would explode over a new posturban landscape of scattered housing developments, industrial parks, office parks, and strip developments. Diffusion would also create the late 20th century's urban crisis: the depopulation and deindustrialization of older cities that had lost their central role. With Wells' diffused urban regions now a reality, it may be tempting to apply his predictions for the 20th century to the 21st. To expect even more radical sprawl, however, represents only a superficial understanding of Wells' rationale. His thoughts in 1900 were so effective because he understood that history rarely moves in straight lines and that the most obvious trends are not always the most important. Momentum today moves toward diffusion and sprawl, just as momentum in 1900 moved toward overcrowding. Then, as now, however, other forces are at work beneath the surface. Today, Wells might say that the 21st century will see the probable re-urbanization of great regions with distinct edges and vital centers.

A movement begins

This re-urbanization won't mean a return of the 19th-century industrial metropolis with its slums and overcrowding, nor will sprawl miraculously disappear, but in most regions it will be contained. Already, cities such as Cleveland, Baltimore, Providence, and even Bridgeport, Conn., are reviving not only their downtowns and waterfronts but also their blighted industrial corridors. The desire to control growth has become widespread, as evidenced by the 240 antisprawl ballot proposals in the November 1998 elections and in "smart growth" becoming an issue in the next presidential campaign. Not only will the central cities reclaim something of their lost dominance, but, as in Portland, Ore., some downtowns will also be strengthened by a network of smaller centers linked to the core by revived regional rail systems. This is regional pluralism: many well-defined urban forms coexisting within the same region.

One reason is economic. The future promises globalization, which will increasingly limit the power of nation-states to determine the future of the world economy. The key players will not be nations but competing regions. The regions that thrive will be those that maintain what the planner and author Peter

Hall has called an "innovative milieu," a critical mass of creative people in technology and culture who will conceive the products that succeed in the global marketplace.

An undifferentiated region of endless sprawl might succeed temporarily in fostering an innovative milieu, but the regions that succeed in the long run are likelier to be those that offer their citizens a range of choices and opportunities, like active central cities, coherent suburbs and small towns, and easy access to open space. Reinforcing this trend is a new appreciation of compact communities with lively streets, diverse neighbors, a range of destinations within walking distance, and good mass transit.

REGIONS THAT SUCCEED IN THE END WILL OFFER A RANGE OF OPPORTUNITIES.

A transformed attitude toward innovation itself will characterize 21st-century urbanism and design. Wells was a dissenting member of a generation of early 20th-century Modernists that architect Daniel Solomon recently called "the Zeitgeisters." Ideologues for an ideological era, they believed that authentic work must reflect the spirit of the age by rigorously embracing the new and discarding the old. Wells understood that technological change moves in complex and surprising ways, but the Zeitgeisters' most influential architect, Le Corbusier, was wed to a single-track vision of modernity, which insisted that the horse-and-buggy era had to be demolished so that the new glory of the highways and the towers-in-the-park of his Ville Radieuse might shine through.

Le Corbusier's future doesn't work. There are, nevertheless, present-day Zeitgeisters who persist in mindless futurism. The worst are the "highwaymen" who ignore calls for a flexible, balanced transportation system and seek to devote a record $218 billion in the new TEA-21 bill to outer beltways and other roads that will only worsen congestion spawned by diffusion.

With much greater justification, Frank Gehry's magnificent Guggenheim Museum in Bilbao has revived the modernist myth of the great architect who tranforms the city by fearlessly defying all precedents to create an avant-garde masterpiece. But the Guggenheim's success depends in large measure on its complex contrast with Bilbao's still-healthy traditional urbanism.

Designers should look to the future by using history as a vital resource to reweave the urban fabric. For example, Anne Spirn and her students of landscape architecture at the University of Pennsylvania are reviving a poor neighborhood in West Philadelphia; Ray Gindroz helped persuade HUD to replace demolished high-rise public housing with traditional streets and row-houses; William Morrish and his colleagues at the University of Minnesota are seeking to revitalize the unfashionable, post-1945 "first-ring" suburbs; Peter Calthorpe has rediscovered the 19th-century integration of rail transit and coherent communities; and Andres Duany and Elizabeth Plater-Zyberk are reviving the concept of walkable neighborhoods, lively public spaces, and intense mixtures of classes and functions in cities and new developments at the region's edge. Who decreed that these exemplars of successful urbanism belong only to the past and not to the future?

Anyone can build big boxes in a sprawled-out, fragmented environment, but good urbanism always requires complex and sophisticated skills to fit a new addition gracefully into the existing fabric. The re-urbanization of our regions—and perhaps the development of a new appreciation of regional aesthetics—will be the major challenge for architecture in the 21st century. ■

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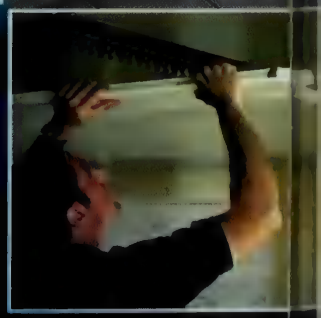

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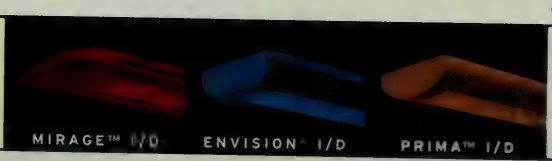

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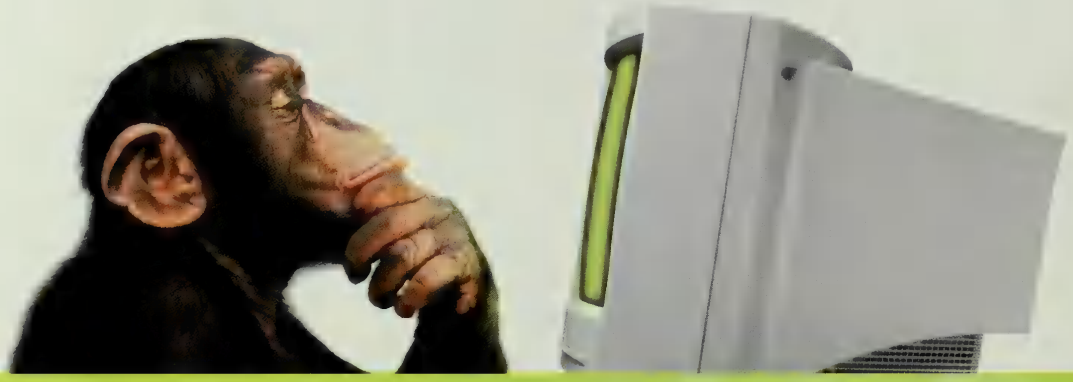

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CIRCLE 21 ON INQUIRY CARD

DIGITAL ARCHITECT Rapid prototyping, a process borrowed from industrial design, lets architects make scale models from computer files.

BY B.J. NOVITSKI

Some day in the next millennium, architects may be able to put design information into a machine that will automatically construct a complete building. Harbingers of such breakthroughs are discernible in the experiments of Japanese construction companies, in which robots assemble building components in the field. The idea is already being implemented, albeit at a much smaller scale, with a new family of technologies called rapid prototyping, which lets designers build physical models directly and automatically from 3-D computer models.

A dozen varieties of rapid-prototyping devices create models by building up thin horizontal layers of a particular material. They all require 3-D CAD data translated to the STL format, named after stereolithography, the original rapid-prototyping technology. STL files are most easily created from 3-D solids modelers, the digital equivalent of modeling clay.

Rapid prototyping is common in the design of automobiles and consumer products. Industrial designers in these fields routinely use 3-D solids-modeling systems such as Pro/ENGINEER and SolidWorks to describe objects that curve in three dimensions. However, 3-D modeling is still rare in architecture firms. The architectural solids modeler form*Z is only beginning to significantly enter mainstream architectural practice because 2-D drafting is still well entrenched. To architects who typically work in 2-D to design buildings with square corners and vertical walls, such modeling may seem overly complicated, but 3-D modeling is virtually mandatory for creating good STL files. Architects willing to learn one of these 3-D modeling systems can take advantage of rapid-prototyping technologies to build physical models with their CAD data.

Rapid-prototyping options

Only about half the existing prototyping technologies are commonly applied in the U.S., according to Terry Wohlers, whose consulting firm, Wohlers Associates in Fort Collins, Colo., specializes in rapid prototyping. (Learn more at www.wohlersassociates.com).

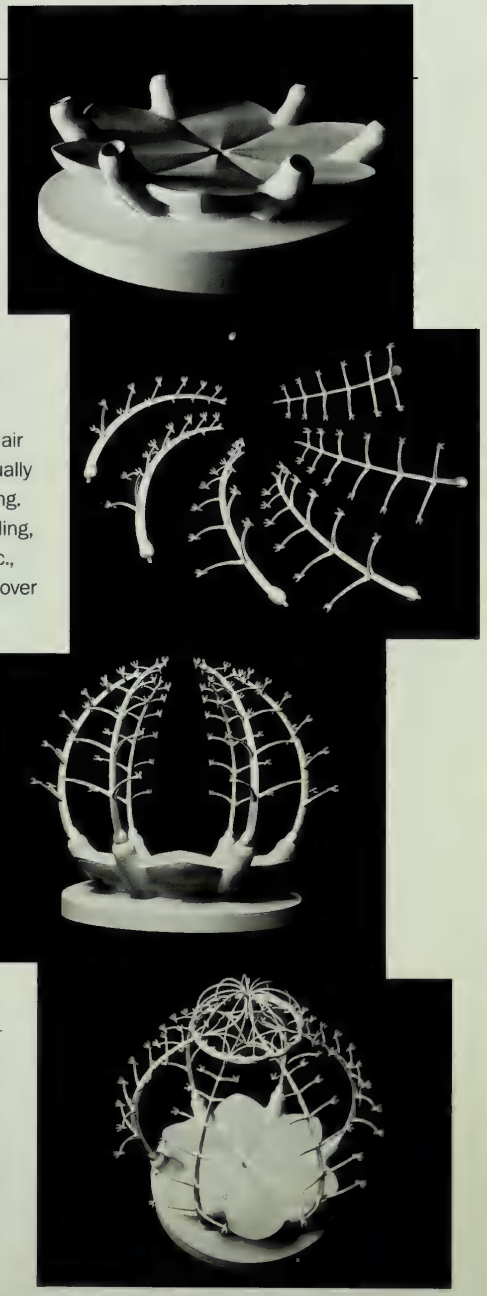
The oldest and most common system is stereo lithography apparatus (SLA) from 3D Systems Inc. There are several SLA models, which vary in size, speed, and cost. With this technology, a laser beam moves through a vat of ultraviolet-sensitive liquid polymer, following the contours of the model's floor plan. Where the beam hits the liquid, a thin layer is solidified. Then the model is lowered slightly within the vat, and the laser produces the next layer.

Because the layers are built from the bottom up, the CAD model must provide temporary supports for roof overhangs and similar geometries. Breaking off the supports after construction can potentially damage the model. Toxic fumes from the SLA make it unsuitable for an office environment. The process, however, affords great precision and strength even in delicately shaped objects.

A process called selective laser sintering (SLS), developed by DTM Corp., is similar, except that the laser beam incrementally raises the temperature of a nylon-based powder to the point of fusing. The surrounding powder supports any overhanging geometry, so extra supports are unnecessary. The extreme heat inherent in the process, requiring increased air conditioning, makes SLS equally unsuitable for an office setting.

Fused deposition modeling, or FDM, sold by Stratasys Inc., features an arm that moves over a horizontal plane carrying a heated nozzle, which deposits melted thermoplastic material in specified locations. The material solidifies as it is deposited, layer by layer. The FDM process can produce several colors but any given piece is monochromatic. Stratasys designs its equipment for use in offices.

Laminated object manufacturing (LOM), from Helisys Inc., involves the successive layering of thin sheets of special paper. Each sheet is automatically placed, bonded to the layer below with a heated roller, and cut with a laser. When complete, the model has the look and feel of wood. It can be sanded and finished with techniques already familiar to architectural model



At Harvard University, Kevin Rotheroe designed a complex conservatory shape using rapid prototyping. These models could not have been built using traditional methods.

builders. LOM machines can produce larger models than other rapid-prototyping technologies. The surrounding cut paper supports overhanging geometries, so it isn't necessary to construct extra supports. This system's cooling and outside air-venting requirements may make it unsuitable for an office environment, however.

In 3D Printing (3DP), invented at the Massachusetts Institute of Technology and commercialized by Z-Corp., a water-based liquid deposited on a thin layer of powder solidifies. 3DP is often called concept modeling because it is relatively fast and inexpensive but lacks the precision of SLA. 3DP machines are safe to maintain in an office setting.

Overcoming obstacles

High cost is no longer a barrier, though Wohlers suspects most architects don't realize how dramatically prices have dropped. "Not long ago, you'd pay a few thousand dollars for a medium sized model," he says. "But now, you can produce a model that fits in a six-inch cube for under $100. You couldn't do that by hand." In particular, rapid prototyping makes models with complex geometries more affordable than if constructed using traditional means.

Complete 3-D printing systems are now in the $40,000-to-$50,000 price range, affordable for large firms that build a lot of models. These lower prices are also reflected in the charges of service bureaus, where architects can have the models made for them.

A more serious barrier is the investment of time and training in conventional software that architects have made. In most cases, a 3-D model developed from 2-D drawings will make a poor STL file. Even this, however, does not stymie Rafael Tapanes, whose Miami-based firm, Reelization, specializes in architectural visualization services for architects.

Tapanes recently experimented with generating physical models from AutoCAD base drawings. He created an AutoCAD model of a Key West prototype house, which features detailed woodworking for its front porch. By exporting the AutoCAD file to 3D Studio Max, intended primarily for rendering and animation, he was able to create an STL file. The process, however, required some manual tweaking of the model's surfaces to make them come together into an actual solid. Nonetheless, even with this extra work, Tapanes believes he invested less time and money than a solids modeler would have required to build the model from scratch.

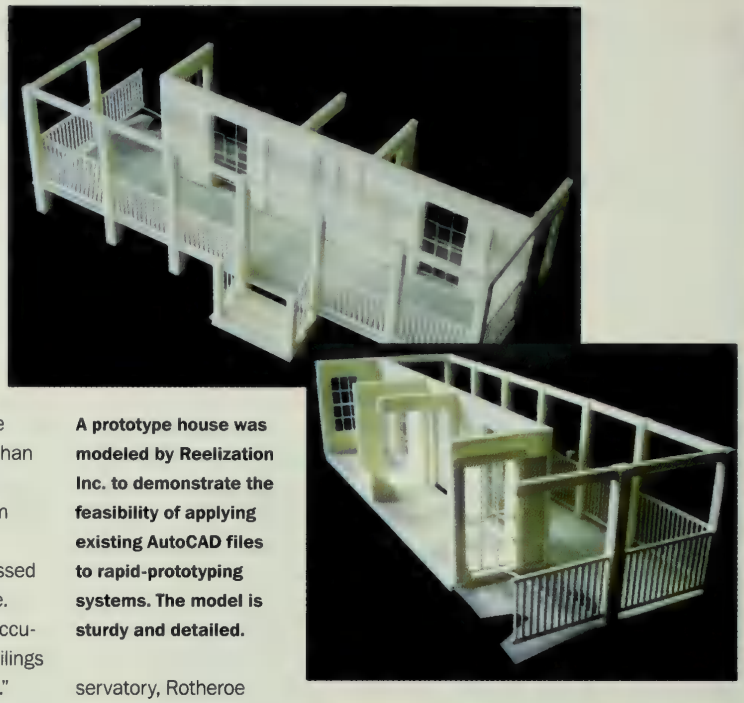
Technicians at DTM processed Tapanes' file in an SLS machine. "The result was an amazingly accurate model," he reports. "The railings are 1/64 inch wide and still sturdy."

Tapanes hopes that architects will come to appreciate the advantages of this technology. "What better way to explore schematic design options than to produce a model within hours, even minutes, and carry it in your hands to a place where you can examine it from any angle." Despite Tapanes' eventual success after starting with a conventional CAD file, most architects trying rapid prototyping use solids modelers, which more readily produce good STL files.

Multiple technologies

Architect Kevin Chaite Rotheroe of New York City, who is currently working on a doctoral degree at the Harvard Graduate School of Design, has chosen to create models with Pro/ENGINEER. Rotheroe's research focuses on metal structures of complex shapes, for which he builds both scale models and full-size mock-ups.

His design for an organically shaped conservatory could not have been modeled with conventional architectural CAD software. A metal frame, whose members resemble curving tree trunks, branch out into a delicate lattice that supports irregularly shaped panes of glass. To create a physical model of the conservatory, Rotheroe made the base with LOM, an appropriate technology for large solid parts. The top component was produced by stereolithography; no other method could have produced the combination of precision, strength, and delicacy. The columns were sufficiently complex to require rapid prototyping, but they were all identical, so cost savings came with mass production. He created one column component with SLA that had a silicon rubber mold, from which 10 identical urethane parts were cast. Each subsequent casting cost 17 percent of the original. Such mass-production techniques would have been possible and financially beneficial even if the geometry of his conservatory were not so complex.



A prototype house was modeled by Reelization Inc. to demonstrate the feasibility of applying existing AutoCAD files to rapid-prototyping systems. The model is sturdy and detailed.

Rotheroe points out that the often necessary use of multiple technologies for different types of components argues against architects buying their own rapid-prototyping equipment. It would be better, he suggests, to develop relationships with specialist service bureaus. This would also lessen the burden of learning, maintaining, and keeping up with technological innovations.

Although most rapid-prototyping devices produce fairly small models, Rotheroe believes they also offer an important opportunity to improve design development through full-size mock-ups of small-building components. He is experimenting with prototypes of a structural column with a complex internal structure. "The use of rapid prototyping during design development can preempt difficulties and misunderstandings during the documentation and construction phases by clarifying a design solution, determining its viability, or highlighting its limitations," he says. "In such cases, a mock-up quickly justifies its cost by avoiding late changes and construction change orders."

For now, such full-size prototypes are limited to connections and other critical details in a structure. But suppose the size of rapid-prototyping machines grew while their cost went down. It's easy to imagine a day when the plastic model emerging from the vat of liquid is the size of a small building. Or when the model emerging from the LOM machine is an actual house. ■

WWW *For a list of rapid-prototyping vendors go to:* **www.architecturalrecord.com** *and click on Digital Architect.*

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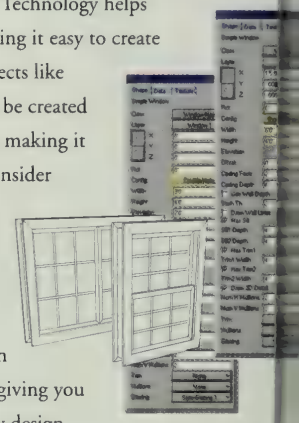

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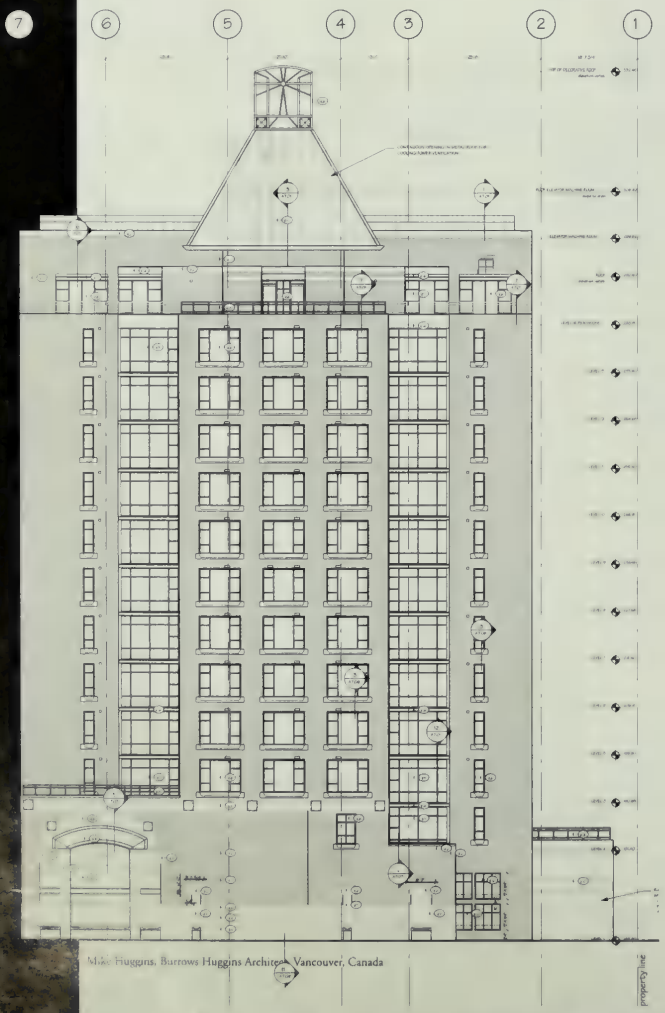


Mike Huggins, Burrows Huggins Architects, Vancouver, Canada

SOFTWARE REVIEWS Rendering lighting realistically. New Web-based tools for collaboration. Making marketing easier.

BY JERRY LAISERIN, AIA

Let there be Light

Lightscape Visualization System; Discreet, a division of Autodesk

Louis I. Kahn once wrote, "Our work is of shadows. It belongs to the light." Rendering software enables architects to add the light—in the form of simulated lighting effects—to buildings described by modeling or CAD software. Some software programs are better at adding light than others. The authenticity of these computer-rendered images depends on many sophisticated computer algorithms, but two of the most important are radiosity and ray tracing. The Lightscape Visualization System is among the few programs combining these two algorithms to produce great realism.

Radiosity simulates the dispersion of natural and artificial light and the way that light bounces among various surfaces and materials. Because it accounts for all the light in a space, radiosity is especially useful in representing subtleties, such as indirect light, soft shadows, and color bleeds—the pinkish glow of a white chair on a red carpet, for example. Ray tracing follows the path of all the rays of light entering an observer's eye from every point within a specific view. Because it is view-dependent, ray tracing is well suited to specular highlights, reflections, and transparency effects.

Contributing editor Jerry Laiserin, AIA, consults, writes, and lectures about the impact of information technology on the practice of architecture.

Unlike the company's competitors, who are compatible only with specific modelers or CAD programs, Lightscape is compatible with most major modeling progams and DWG-compatible CAD software. Version 3.2 is the first update of this software since Lightscape was acquired by Autodesk and folded into the company's Discreet subsidiary (formerly Kinetix). It sports enhanced compatibility with AutoCAD (including AutoCAD 2000) and with Discreet's 3D Studio Max and Viz modelers.

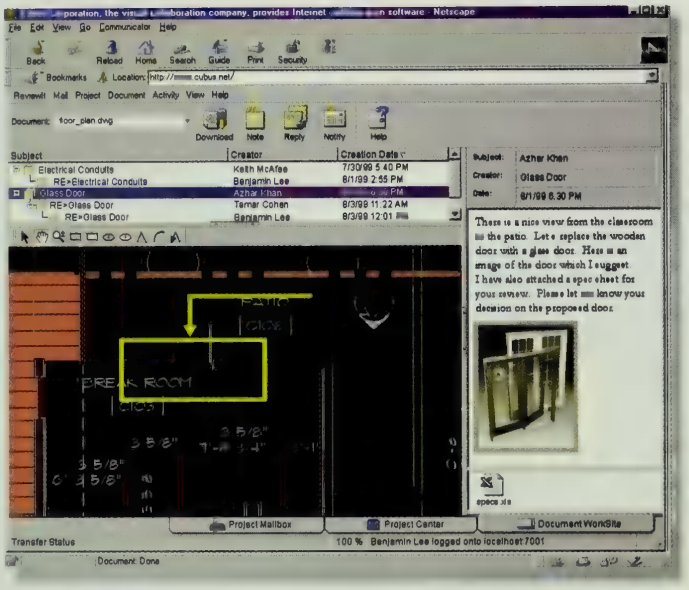
The new version's improved user interface includes easier drag-and-drop editing of light sources. As before, these can be based on the Illuminating Engineering Society photometric data from luminaire manufacturers or on custom sources. Software utilities, like network rendering, previously available for an extra cost, are now included in the base price, making Lightscape 3.2 an even better value than previous versions.

Lightscape remains the most realistic stand-alone rendering software to simulate "the light."

System requirements: PentiumPro 200, 128MB RAM, Windows95/98/NT4.0, XGA graphics (OpenGL graphics accelerator preferred). Contact Discreet, a division of Autodesk Inc., 10 Rue Duke, Montreal, Quebec, Canada H3C 2L7; 800/869.3504; www.discreet.com

Architect-friendly collaboration

ReviewIt AEC, Cubus Corporation



ReviewIt AEC's Web-based project tools can be rented or purchased.

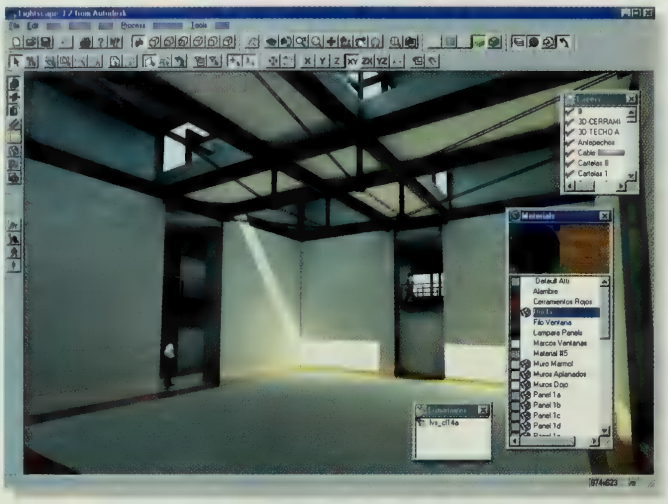
Just as CAD heralded the first architectural computing revolution, Web-based collaboration, which computerizes communication among firms, heralds the next. Project collaboration on the Web relies on generic Web browsers, like Microsoft Internet Explorer or Netscape Navigator, to serve as the front-end, or access point, for project participants, including architects, engineers, and consultants who want to post, view, and modify documents and data on project Web sites [September 1999, pages 53-54]. Many online tasks, however, like marking up drawings or monitoring project workflow, require computing capabilities not easily accomplished with a generic Web browser.

One popular solution to this problem is to program the project Web server to send little applications, or applets, written in the Java software language, to appropriately "flavor," or configure, each project-team member's browser to each task every time a new view or function is needed. Instead, ReviewIt AEC offers a comprehensive set of browser enhancements that authorized project participants must download just once. This allows users with ReviewIt to perform some complex project operations more efficiently and in fewer steps. For example, ReviewIt includes graphical indexing and context preservation, unique features that automatically cross-reference all project messages and E-mail to the corresponding drawings. ReviewIt also supports workflow monitoring, which can be customized to fit the needs of the user. Some of these needs might include notifying the architect every

time a consultant receives a shop drawing from a contractor.

Available as a per-project rental or for outright purchase, ReviewIt AEC stands out in a crowd of "me-too" Web-based project collaboration tools with its unique and architect-friendly alternative approach.

System requirements: WindowsNT Server4.0 for Enterprise version; Web browser (Microsoft Internet Explorer 4.01 or Netscape Navigator 4.06). Cubus Corporation, 98 Battery Street, Suite 250, San Francisco, CA 94111; 877/442-8287; www.cubus.net



Lightscape Visualization System was used to create this realistic rendering.

Marketing 101

MarketEdge, MarketEdge Systems

Business development is the process of winning new projects. Many business development tasks don't fit predefined software categories or cut across multiple programs. For example, a marketing coordinator tracking prospective clients may exceed the capacity of address and calendar software that's sufficient for the rest of the firm. Merging project team resumes, images, and work schedules into the cumbersome qualification forms mandatory for government work challenges the multitasking skills of the wiliest marketeer.

Many marketing-management software packages offer comprehensive solutions to these problems, but MarketEdge, built on the cross-platform FileMaker Pro database, is the only one that runs equally well on Windows PCs or Macintoshes. MarketEdge includes components for every key business development activity, from address list management, reminder calendars, and call reports to resumes, project descriptions, and follow up letters.

More important is the "project qualifier" module that tracks individual proposals and the overall success rate of the business development process. By reviewing past proposal costs and performance, firms can decide which projects are worth going after and what the probability of winning will be. Rather than just cranking out more proposals, MarketEdge exploits the analytic capacity of computers to help firms market more effectively. This is highly recommended.

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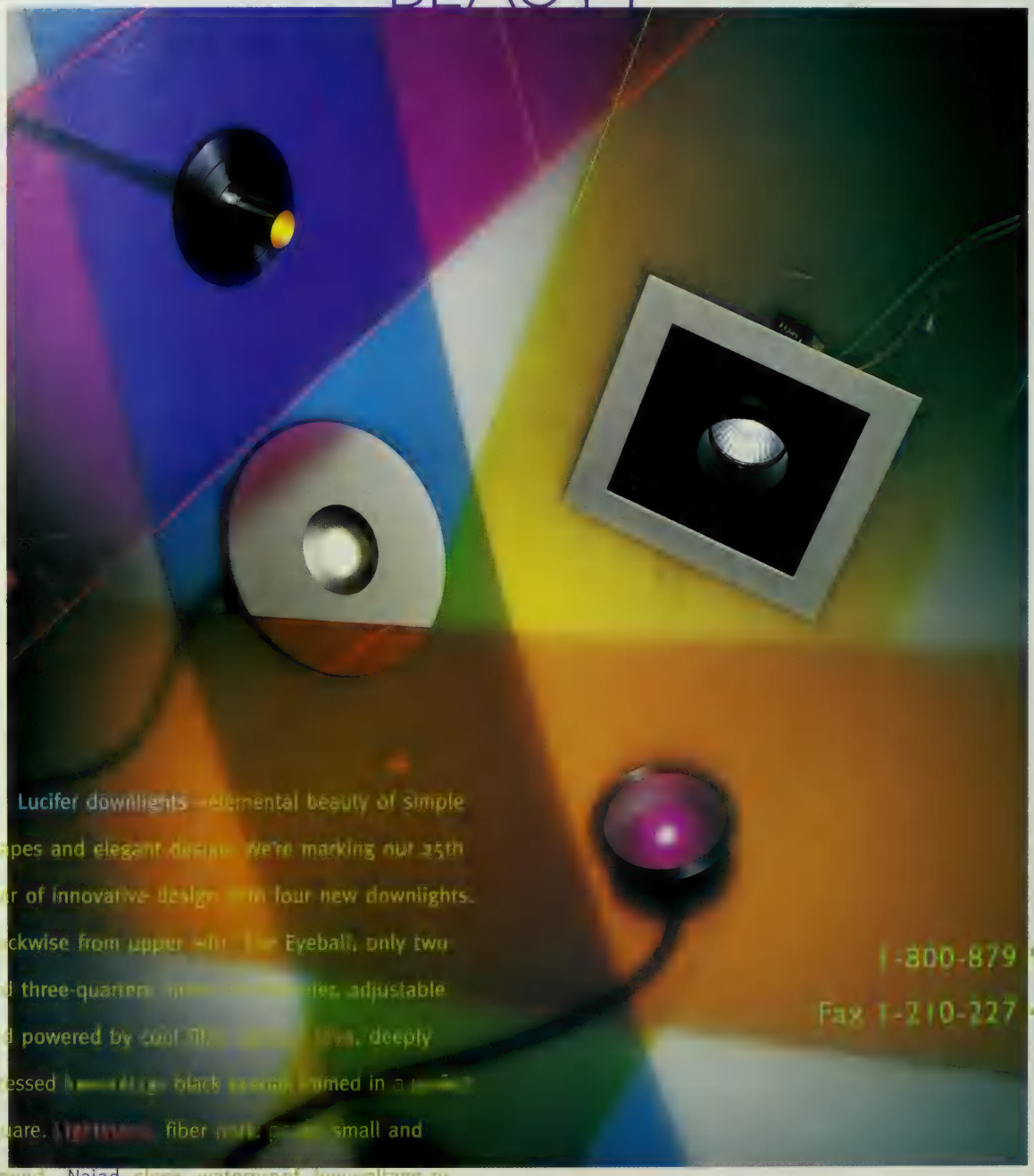

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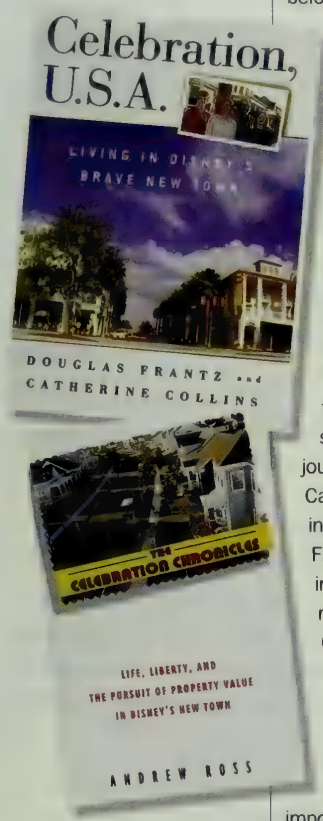
BOOKS Two new books go behind the front porch to see what it's like to live in the town that Mickey built.

BY JOHN E. CZARNECKI

The Celebration Chronicles: Life, Liberty, and the Pursuit of Property Value in Disney's New Town, *by Andrew Ross. New York: Ballantine, 1999, 340 pages, $26.*

Celebration, U.S.A.: Living in Disney's Brave New Town, *by Douglas Frantz and Catherine Collins. New York: Henry Holt & Co., 1999, 342 pages, $25.*



John E. Czarnecki is an urban designer with the firm Urban Strategies in Toronto and is a former editor of Crit, *the magazine of the AIAS.*

After a blitz of newspaper and magazines articles over the last few years, the first books examining Disney's neotraditional town of Celebration, Fla., have started to hit the market. Interestingly, the first two off the presses take similar approaches to the subject—using the perspective of writers who moved to the new town as part of the first wave of residents.

Like many American towns before it, Celebration is being settled by transplants from across the country, people who left what they had to start anew. The town's initial group of homeowners were drawn to a scene that was "a heady stir of Disney fever, America fever, and property fever," says Andrew Ross in *The Celebration Chronicles.* Ross, a professor and director of American studies at New York University, left Manhattan for a year in Celebration. At the same time, husband and wife journalists Douglas Frantz and Catherine Collins were researching and writing *Celebration, U.S.A.* Frantz and Collins, who had lived in a number of major cities, moved from suburban Connecticut, bought a house in Celebration and sent their two children to school there.

Although not written by architects or design professionals, these two books offer important snapshots of life in the most publicized new town at the end of the century. By spending at least a year in the town and becoming active residents, Ross and Frantz and Collins humanize their portrayals of Celebration, while offering lessons on the biggest test for a new development: how people interact and live their daily lives.

Contrasting approaches

Not often are two books with such similar goals published simultaneously. Redundant? No. Similar issues and anecdotes appear in both books, but are treated differently. Ross' approach is more academic and his insights are deeper, with a greater sense of Celebration's place in the context of American urbanism. And he is good at striking a balance between observer and participant.

Frantz and Collins' book is a lengthy human-interest story, replete with compelling observations about townspeople. Frantz and Collins, though, sometimes get too personal. Do we really need to know, for example, about their children's spats with neighbors or details of domestic abuse in the neighborhood?

Neither book serves as a promotional piece for Celebration. Nor does either succumb to bashing Disney and New Urbanism. The authors all acknowledge the impact of urban design in creating an environment that encourages neighborliness. Ross posits, however, that conflict and stress in dealing with homebuilders, Disney, and Celebration School are what initially drew people together, not necessarily the walkable streets and rarely used front porches. "It had taken the bitter taste of jeopardy to arouse the appetite for strong society," Ross says.

For those in the building professions, *The Celebration Chronicles* may offer the most sobering view of American homebuilding today, though both books note shoddy construction of Celebration homes. Frantz and Collins, on the other hand, are almost too even-handed in playing down the homeowners' problems. Ross, by contrast, succinctly gives one reason for the below-par construction: one of the two Celebration homebuilders, a Chicago-based company accustomed to having a seasoned labor pool at its disposal, had never built in Florida before and relied mostly on unskilled, poorly paid migrant labor with nearly impossible deadlines. Celebration, Ross says, was "planned with impeccably correct intentions, built with improperly low-wage labor, and sold on the basis of improbably lavish expectations."

Disney appears in both accounts as a benevolent dictator in Celebration's development. When they signed their deeds, residents knew and accepted Disney's controls, which included more than 100 pages of restrictions, such as prohibiting complaints about mosquitoes or use of nonwhite draperies. Celebration may, in fact, be the least democratic nongated community in America. As Frantz and Collins say, "Disney's every action should be scrutinized for broader implications." Ross takes this caveat even further, portraying Celebrationites more as customers or consumers than as citizens of a democracy, which may be a good lesson for the future of public life in America. ■

The Building Blocks Series, *by Ezra Stoller. New York: Princeton Architectural Press, 1999, 80-100 pages, $20 each.*

For much of this century, photographer Ezra Stoller made popular icons of landmark Modernist buildings, which appeared in advertisements and consumer magazines, as well as the architectural press. In so doing, he sparked the American public's appreciation of Modernism. His high-contrast black-and-white images gave the severe volumes and clean lines of the new architecture a certain romance that made it easier for the public to accept these buildings as works of art.

Each volume in this collection of small-format books features Stoller's images of a different important building. The first group covers Le Corbusier's Chapel at Ronchamp, the United Nations complex by Wallace Harrison and others, Paul Rudolph's Yale Art + Architecture Building, and Eero Saarinen's TWA Terminal. These will be followed in the series by the Seagram Building, Fallingwater, Taliesin West, and the Salk Institute. Supporting photographic documentation of each building over time is a preface by the photographer, a short historical essay on the design, construction, and public reception of the building, and newly redrawn plans. *David Simon Morton*

Design Directory Series. *New York: Universe, 1999, approximately 360 pages, $25.*

Ambitious and graphically intense, these directories tell the full story of selected countries' experiments in modern product design. For each country, the directory begins with a pictorial showcase of the best wares and follows with a timeline and history of local modern design.

The heart of each volume is an encyclopedia of designers, manufacturers, and relevant terms (such as "ergonomic" and "democratic design" in the Scandinavia directory), with each entry receiving at least two pages of attention. Essays by academics and curators and an appendix with the addresses of museums and manufacturers round out each volume. Directories for Scandinavia and Italy are available now; forthcoming titles include Great Britain, Germany, the United States, France, Spain, and Japan. *D.S.M.*

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CIRCLE 26 ON INQUIRY CARD

Single Building Series, *edited by Oscar Riera Ojeda. Gloucester, Mass.: Rockport, 1999, 120-150 pages, $25.*

Not every building in this series deserves the exhaustive attention it receives. Even the outstanding projects, such as Vincent James' Type/Variant House, don't really require 200 color photographs and 100 black-and-white drawings, plans, and conceptual sketches for proper documentation. An architect only has so many tricks to play, and this fetishistic presentation seems to be an example of design overkill. Each book includes texts from both the designer and the client. Other titles in the series are Kyu Sung Woo's Whanki Museum, Bohlin Cywinski Jackson's Ledge House, Will Bruder/DWL's Phoenix Central Library, Cesar Pelli's National Airport Terminal, and Gwathmey Siegel's Henry Art Gallery. *D.S.M.*

The Michigan Architecture Papers MAP series. *Ann Arbor, Mich.: 70-90 pages, $17 each. John Dinkeloo Memorial Lectures and Raoul Wallenberg Lectures: 42-50 pages, $12 each.*

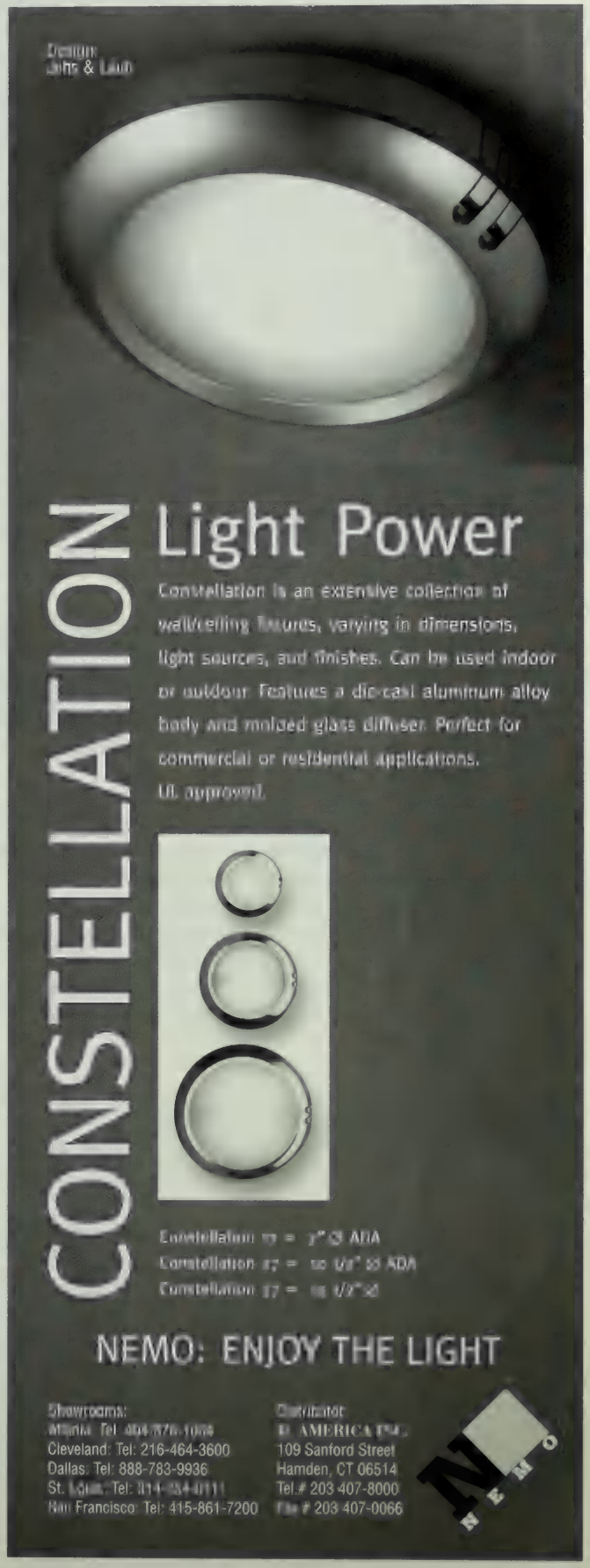
For four years, the University of Michigan's College of Architecture and Urban Planning has published the lectures of visiting architects and critics in illustrated, heavy-stock, fine-format paperbacks. For readers who want focused looks at the work of, say, Tod Williams and Billie Tsien or Will Bruder and want to know what the architects have to say about their own projects, or Vincent Scully's or Michael Sorkin's observations about public space, these pamphletlike publications are elegant resources. Especially refreshing are the volumes covering the Dutch firm Mecanoo, the Icelandic Studio Granda, and the light architecture of Richard Horden. Conceived and edited by Dean Brian Carter, the series won the AIA International Book Award in 1998 and continues to add new titles. *D.S.M.*

Hybrid Space: New Forms in Digital Architecture, *by Peter Zellner. New York: Rizzoli, 1999, 192 pages, $50.*

For at least a couple of decades architects have used computers as tools to increase productivity and handle repetitious tasks such as making production drawings. But now, asserts Peter Zellner, a new generation of architects is using computers as creative devices capable of generating new design ideas and forms. The author, who studied with Rem Koolhaas at Harvard's GSD, profiles 12 firms, explaining their design processes and presenting recent projects. The firms include Greg Lynn FORM, Kolatan/Mac Donald Studio, and Reiser + Umemoto [all of whom are featured in RECORD's millennium coverage this month, page 85], as well as Morphosis, Oosterhuis Associates, Ocean, and UN Studio (Ben van Berkel and Caroline Bos). The book's hyperkinetic graphics echo the architects' designs, but don't make it easy to read.
Clifford Pearson

Future Systems, *by Marcus Field. London: Phaidon Press, 1999, 208 pages, $50.*

Started in 1979 by Jan Kaplicky and Amanda Levete, the London-based firm Future Systems has designed everything from buildings to brightly colored foam furniture in a style that combines high technology with a pop sensibility. This snazzy monograph captures that style well. *C.A.P.*



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CIRCLE 28 ON INQUIRY CARD

CORRESPONDENT'S FILE Budapest, a city of myriad historical styles, struggles to find its own contemporary voice.

BY CARL KOVAC

Hungary's Parliament, built in 1905, seen from the Buda side of the Danube.

Budapest has an invigorating effect on visitors. Marvels appear as you explore the neighborhoods: Lean out of a second-floor window overlooking Budapest's 102-year-old Vígszínház (Comedy Theatre) and take in the ornate wrought-iron railings ringing the structure's balconies. Gape at the buildings' intricate cornices and the decorative masonry adorning their facades. Make your way across the Danube to see 2nd-century Roman ruins as well as the tomb of the Dervish Gül Baba, one of the few remaining architectural reminders of 150 years of Turkish occupation.

Frequently, it is visitors "who draw our attention to the remarkable architectural treasures that form the backdrop to our everyday lives," says István Schneller, chief architect for the City of Budapest. He doesn't want this magic to disappear—but it may be in danger.

Carl Kovac is a freelance writer who has lived in Budapest for almost six years.

A long and complicated story

Some knowledge of the area's history is essential to comprehend the local architectural mix. Over the past 1,000 years, Hungary has been invaded and/or ruled by Romans, Ottoman Turks, Austrians, Germans, and Russians. With the exception of the Wehrmacht and the Soviets, each contributed positively to the country's architecture.

Although a number of Baroque and Classical buildings remain from the period following the Turkish occupation, which ended in the late 17th century, the city is dominated by design philosophies dating to the second half of the 19th century: Anti-Historicism, Neo-Renaissance, Neo-Classical, Neo-Gothic, Secessionist, and a Middle European mixture of Austrian Expressionism, Czech Cubism, and late Art Nouveau—you name it. The Bauhaus school emerged during the 1930s, and then came the Soviets, who blighted the country with industrial buildings and apartment estates designed and constructed in Socialist Realist—read drab and boring—configuration.

Now Hungary is being hit by yet another incursion, this time by multinational corporations—an invasion that many architects contend is not only blemishing the city's aesthetics, but is also changing its very culture.

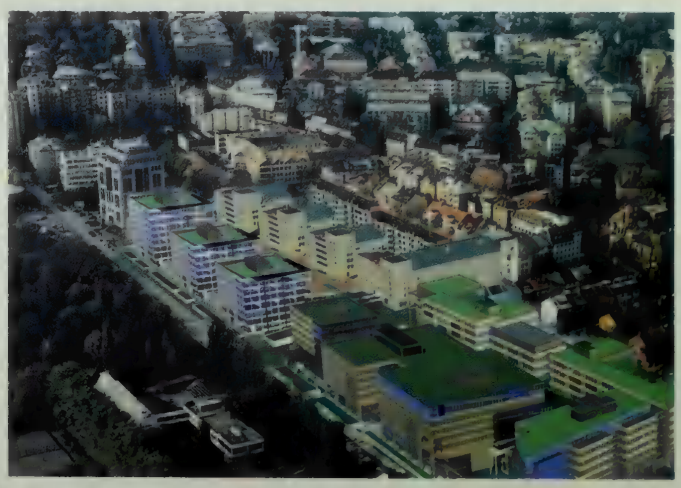
Holding the line

"Today, the main aim for Hungarian architects is to define the Hungarian identity to the world," says József Finta, managing director of Finta and Associates Architect Studio. "Hungarian architecture is very colorful; it has a very characteristic style. It's an eclectic, balanced style, enhanced over 1,000 years by various geopolitical influences. Here, you can find many ways of thinking."

While there's no dearth of diversity, Budapest doesn't have all that many truly modern buildings yet. "The municipality is quite conservative; they want to preserve the old styles. It is good that they want to preserve the character of the capital, but they are too conservative," says Finta.

Conservatism has its upside. Because Budapest is one of five major European cities with a core of 19th-century architecture intact, the capital has attracted U.S. and international filmmakers in need of period atmosphere. But as Hungary becomes a bigger player in the global economy, modern high-tech office buildings, multiuse complexes, and shopping centers—many of them developed by foreign investors and designed by foreign architects—are beginning to emerge in Budapest and in other major cities throughout the country.

One such example is the $28 million, 10-story R70 office building on a main artery near the Keleti



MOM Park, a multiuse complex, is taking shape on a 10-acre site.

railway terminal in the city's District VII, for which construction began in early November. Developed by the German investment group Mahler Projekt International GmbH and designed by the Budapest architecture firm Aula-Planconsult Kft, the building will have a glazed elevation dominated by a tower clad in champagne-hued aluminum paneling, accented by blue-tinted windows. Budapest mayor Gábor Demszky sees the project, scheduled for completion in 2001, as a catalyst in revitalizing the district, known in better days as a commercial, cultural, and economic center.

In District XII, on the other side of the Danube, the $142.5 million MOM Park office, retail, entertainment, and residential complex is taking shape amid a forest of gantry cranes on a 10-acre site once occupied by the former state-owned Magyar Optika Mûvek (Hungarian Optical Works). Developed as a joint venture between a Budapest company and two companies based in Munich, the complex will encompass four four- and five-story apartment buildings, underground parking, one eight-story and two seven-story office buildings, and a seven-story multifunctional center housing shops, restaurants, coffee houses, a business center, a nine-screen multiplex movie theater, and more underground parking. The apartment buildings were designed by the Budapest firm Teampannon Kft, and the center by the Antal Puhl architecture studio of Szentendre, Hungary. Architekturbüro Kochta of Munich provided the overall design concept. Slated for completion in late 2000 or early 2001, MOM Park "is an example of modern architecture, but with a very strong German influence," says Tamás Noll, Teampannon's managing director.

Szent István Basilica is being restored by Architekton, based in Gödölô.

The mall invaders

Meanwhile, some 19 shopping centers have been built or are going up in and around Budapest, and this particularly irks Schneller, the city's chief architect. "I'm fighting them always," he says. "I don't like these boxlike structures being built in greenfield areas, these primitive boxes covered with metal. The architecture of these shopping centers is very inhuman. You arrive at a gray parking area and you go into a box. They are claustrophobic."

They also will have an adverse impact on the environment and the historic city's very survival in the not-too-distant future, Schneller predicts. "According to a commercial traffic planning survey we made in 1996, only about 20 percent of shoppers used their cars. All the rest used public transportation, rode bicycles or walked. But the prognosis is that in 10 to 15 years, so many more people will be using their cars that the burden on the road network will increase by 30 percent and pollution will increase even more."

One of many: the $70 million Mammut shopping center opened last year.

The better malls, he says, are mixed-use complexes "of high architectural quality" located at mass traffic junctions, such as the sprawling West End Center adjacent to the Nyugati (Western) Railway Station. The $200 million complex will initially consist of four separate buildings housing a hypermarket, multiplex cinema, specialty shops, office space, a five-star casino hotel, and indoor parking facilities. There will be a wide promenade along the street side of the complex, and a landscaped roof garden with an ice skating rink will extend over the tracks leading to the commuter station. Ensuing phases will include residential facilities and additional office space, with final completion slated for 2005.

The Nyugati Station was designed and built by Alexandre Gustave Eiffel; in designing West End City Center, Finta retained elements of the terminal so as not to break up the continuity. For example, the glazed roofs of a new commuter station and the main entrance to the center will have the same 22-degree pitch as the roof of the terminal.

The conversion crusade

Buildings registered as national monuments, such as the 92-year-old Gresham Palace and the Ybl Palace, are being converted by foreign developers into five-star hotels and upmarket office, retail, and residential complexes. Finta of Finta and Associates sees little wrong with this, though the problem "is that there are not too many 100- to 150-year-old buildings that can be adapted to such use."

Other buildings listed as monuments, including Parliament and several museums, also are undergoing refurbishment in a government-financed effort to restore some luster for the new millennium. It's hard to find one of these edifices without a shroud of scaffolding and protective mesh.

A theater debacle

The government hasn't treated other projects so kindly. Citing cost overruns, it killed construction of the new National Theater in fall 1998 after $12.5 million had been sunk into excavating the site in Budapest's city center and pouring the foundation for a two-level underground parking garage. The project had been launched by the former government, dominated by an opposition party. Plans now call for a smaller theater to be built on a site nearby along the Danube.

As for the National Hole, as the gaping foundation site has come to be known, the government has no intention of letting it become symbolic of the imperiled position of Budapest's architectural heritage. A trade, tourism, and conference facility will be built on the upper level, while an underground parking lot will be opened on the lower level. ■

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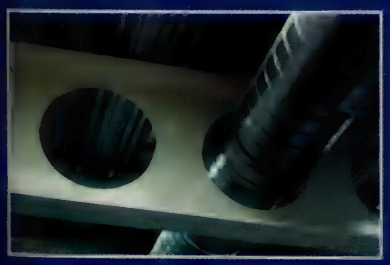

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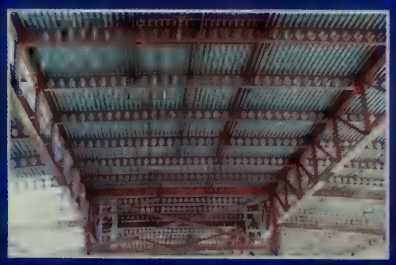

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CIRCLE 30 ON INQUIRY CARD

MINIMALIST DE YOUNG DESIGN CAUSES A RUCKUS IN SAN FRANCISCO

For such a socially progressive city, San Francisco sometimes seems a visual prude. The conceptual plan by Swiss firm Herzog and de Meuron for a sleek, 280,000-square-foot new building to replace the seismically unsound, too small de Young Museum has raised eyebrows and blood pressures all over town.

The proposal, which exhibits the hallmark minimalism of Herzog and de Meuron, will replace the existing facility in Golden Gate Park. The firm's plan consists of three parallel bars sliced at shallow angles to interlace with the park's landscape. The ground floor is dedicated almost entirely to the public, allowing nonpaying visitors to wander through the building and to the park beyond. A below-grade level houses exhibition halls, mechanical, loading, and storage. Second- and third-story galleries are capped with a huge soaring roof that covers some of the outdoor spaces on the ground floor. A 180-foot-tall observation tower, narrower at the base and flaring to the top, houses offices and anchors the end of one bar.

A preliminary concept had large expanses of glass wall. The approved, modified version still has large planar elevations, but wood has been added to the palette.

Sneers and support

Clearly, it is not a design that is easily understood. Since the unveiling of the first concept in June, self-appointed guardians of San Francisco's architectural heritage have been on a tear. For instance, the *SF Weekly* published a backlash piece by the organizer of a group who call themselves People for a New de Young.

After months of haggling and adjustments, the de Young board met in October to vote on a revised design. The room was packed with people waiting to speak about the project, a large majority of them architects who offered emphatic support for the project, including a formal resolution to that effect by the San Francisco AIA board.

Persuaded by the vision of the Swiss firm's proposal and the support for it, the board voted unanimously to proceed with architecture and engineering on the $90 million building (the total project costs are estimated at $135 million). The board also announced that the local firm Fong & Chan will collaborate with Herzog and de Meuron as architect of record.

The battle is hardly over. In a city known for almost rabid citizen participation, there are many more public-opinion obstacles for the project to clear before construction starts in 2002. Among those will be the Environmental Impact Report process in mid-2000 and a series of public meetings before final approval by the Recreation and Parks Commission and the Board of Supervisors.

Lisa Findley

COLIN ROWE, INFLUENTIAL THEORIST AND RIBA GOLD MEDAL WINNER, DIES AT 79

Colin Rowe, a professor and historian who had an extensive influence on contemporary architectural theory, died in November at age 79. The cause was lingering complications from a stroke he suffered in May.

Rowe, who was born in South Yorkshire, England, came to the U.S. in 1952 as a Fulbright scholar at Yale. He then traveled across the country before taking a post at the University of Texas, where he was eventually fired—with several colleagues—for what was seen as radicalism. Rowe went back to England only to return to the U.S. as an architecture professor at Cornell University, where he served from 1962 until his retirement in 1990. He also was a visiting professor at the University of Maryland.

One of Rowe's early essays, *The Mathematics of the Ideal Villa*, published in 1947, explained Modernism's dependence on past precedents—a crucial step in debunking the notion that the movement was free of history. Amid many essays and magazine articles, Rowe's books include *Collage City* (1978), written with Fred Koetter, and *The Architecture of Good Intentions* (1994). In 1996, Rowe published *As I Was Saying*, a collection of essays and memoirs. At his death, he was working on a book about Italian Renaissance architecture.

Renaissance man

"Colin's major influence was the ability to analyze and criticize modern architecture given a historic continuity," says architect Judith DiMaio, a long-time friend, student, and colleague of Rowe who is now an associate professor (adjunct) of architectural design at Yale. "He liked and deeply understood modern architecture, but his heart was in Renaissance architecture. He could see the spaces and great buildings of Michelangelo and Borromini and discern their relation to Modernism."

Rowe at his 70th-birthday party.

On a personal level, Rowe "had a tremendous following of students and colleagues," DiMaio remembers. "He had an incredible ability to inspire passion and provoke curiosity."

The AIA recognized Rowe's efforts in 1981 with the Topaz Medallion for teaching excellence. Rowe, who became a U.S. citizen in 1987, moved to Washington in 1994. In 1995, he earned another significant honor when he was awarded the Gold Medal by the Royal Institute of British Architects.

Pure, white form

In the 1950s and '60s Rowe favored a formalist approach. By then, the Modernist aesthetic had become diluted; Rowe's antidote was the idea that architecture could embrace the idea of form for form's sake and that the forms of modern architecture could be detached from Modernism's social aspirations. Nevertheless, history was always an underlying principle of his thinking.

In the '60s, the new generation of American architects split into two factions, the Whites and the Grays. The Whites—influenced by Rowe and so-named because of their preoccupation with formal purity and the absence of color—included Michael Graves, Richard Meier, Peter Eisenman, Charles Gwathmey, and John Hejduk (Hejduk also collaborated with Rowe on an essay that appeared in RECORD in 1957). In the 1970s, Rowe turned toward a more contextual approach to design; his concerns about the fate of urban centers amid suburban sprawl were fundamental to New Urbanism.

Rowe is survived by a brother, David, of Oxford, England. A private memorial service was held on November 10. A public service to be held in Washington, D.C., is being planned for early next year.

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PEI COBB FREED DESIGNS CAMPUS FOR WESTERN-STYLE SCHOOL IN CHINA

The China Europe International Business School (CEIBS) has opened a new state-of-the-art Shanghai campus designed by Pei Cobb Freed & Partners. The new facility, which covers 10 acres and cost $16.2 million, represents the first phase of a three-phase scheme. CEIBS, founded in 1994 by the European Commission and China's Foreign Ministry, offers Chinese students an education in Western business methods. The EU and the Spanish government were major donors for the project; fittingly, the new campus has both a Spanish Centre and a Spanish Residence.

Although an American architecture firm was appointed, Ian Bader, AIA, project design partner along with Henry Cobb, FAIA, says he made it a point that "the campus not be intellectually, physically, or architecturally an import from America." He says the site is surrounded by recent, insensitive Western architecture, so he created "an inward-looking campus, so as not to look at the surrounding junk."

A school with soul

The academic center is designed around an L-shaped central garden, with buildings of varying heights plugged into an arcade. The landscaped garden was designed to take visual precedence over the actual buildings; the library alone stands out and is meant to be the symbolic heart of the institution. The architects used local technologies and construction techniques, importing as few components as possible. On any given day, 500 to 600 Chinese workers were on-site, managed by Pei Cobb Freed and its Chinese associates, the local firm ECADI. *Susanna Sirefman*

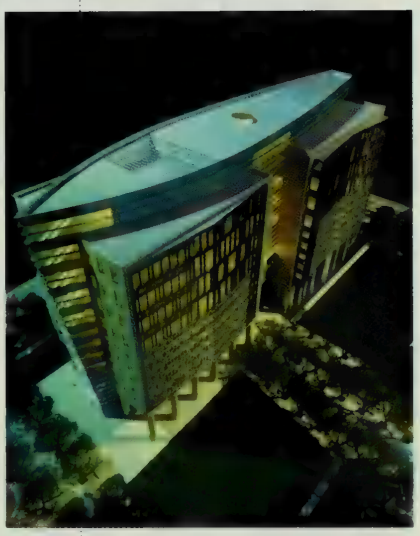
NEW MIAMI COURTHOUSE COMPLEX BALANCES TRANSPARENCY AND SECURITY

Arquitectonica's proposed $123 million federal judicial complex for Miami was designed both as a symbol of the U.S. government's efforts to elevate the design of its public buildings and as a response to the 1995 bombing of the federal building in Oklahoma City.

The plans for the complex, unveiled in late October, call for two towers—each irregularly shaped—one concave and the other convex. "They are not symmetrical, like justice hanging in the balance," says Arquitectonica partner Bernardo Fort-Brescia, FAIA. The towers are connected by a transparent, monumental breezeway that begins 45 feet above the ground, crosses a downtown street, and offers a view of Biscayne Bay and the port of Miami. The breezeway will provide a waiting area for the courtrooms it connects in the two towers and will allow the structure to be read—at least from a distance, if not necessarily at street level—as a whole.

Adding some needed green

As a whole, the building is shaped like a ship, appropriate for a downtown Miami location just blocks from the world's busiest cruise port. The complex sits on two city blocks, and to meet security concerns, it is set back 100 feet. Because this particular section of downtown Miami has little greenery, Arquitectonica chose to make the setbacks into a landscaped park, which Maya Lin will design as a series of undulating waves—a concept that Fort-Brescia terms "a very irregular, very sculptural lawn that could be construed as an ocean."



Seeking clarity

The design intends to offer a symbolic architectural statement: a building that is at once approachable and awe inspiring, a tangible expression of democracy at work. The towers will be precast sand-colored concrete and will use ample glass, letting light flow into courtrooms, a deviation from the traditional judicial design. The glass is also shatterproof.

"The building is very transparent," says Fort-Brescia. "It speaks to the transparency of the judicial process today, which is very different from the process of the past. We were intent on making a place that is not intimidating, a place where you could feel that you would be treated fairly." *Beth Dunlop*

PCN SERVICES DOMINATE A/E/C SHOW **If successive iterations of the A/E/C Systems show were biological generations, the rate of evolution among Internet services for design and construction would astound even the staunchest digital Darwinist. At November's event, held in Chicago, in conjunction with Computers for Construction, Web-based project collaboration networks services (PCNs) dominated the exhibitor list.**

Not only has the number of vendors in this category doubled every six months for the last two years, but also the genre is now splitting into specialized subcategories. Established providers like BluelineOnline, ConstructWare, Cubus, Evolv, Framework Technologies, and MPInteractive are staying close to their roots as document repositories, communications clearinghouses, and construction administration transaction centers. Newcomers BuildPoint, eBricks, HeavyWare, primecontract.com, and PurchaseSoft create online trading hubs or marketplaces to accelerate project procurement—sourcing, bidding, and matching contractors and subs with materials suppliers. PCN stalwart BidCom is adding an E-marketplace, while Autodesk's spin-off, Buzzsaw.com, combines an array of third-party E-market services, like catalogues and estimating, with a PCN that hosts for free projects with up to 100 megabytes of data. Construction.com (run by McGraw-Hill, publisher of RECORD) is also steadily expanding in this area.

While the PCN category as a whole offers architects cost-effective tools to accelerate project design and delivery, individual services likely will struggle for survival over the coming months to determine the digitally fittest. ***Jerry Laiserin, AIA***

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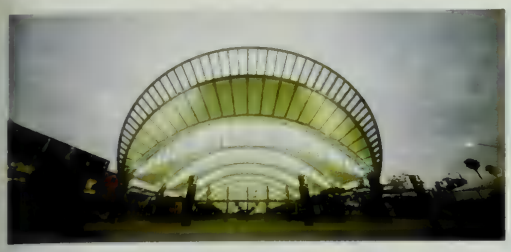

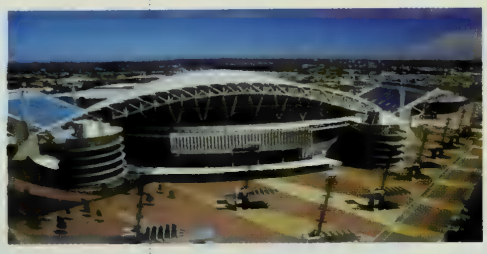

AS SYDNEY'S OLYMPICS NEAR, NEW STRUCTURES GET MIXED REVIEWS

Sydney's buildings for the 2000 Summer Olympics are nearing completion, and local architects' reactions to their design is decidedly mixed. Some say the structures are well organized, unpretentious, and practical, with some gems among the bunch; others complain of mediocrity and sterility.

The main venues are at Homebush Bay, about an hour's drive from the heart of the city, a site that can also be reached by ferry and a new rail line. Sydney architect Lawrence Nield says the primary buildings are "very good prose buildings," while a select few "rise to the level to poetry." A more common view is that of architect Keith Cottier: "It doesn't push any boundaries . . . I put it down to caution, playing safe."

The main criticisms have concerned a system of design and construction that allowed private developers come in as a financial team with their chosen architects and saw the New South Wales government largely relinquish control. As a result, there were no design competitions, and finances were the priority, not innovative design.

Raves for the railway

The exception was the Olympics railway station (above left), designed by Ken Maher of Hassell Architects, with the government as client. The zinc, glass, and steel structure will accommodate the arrival of 1,700 passengers every two minutes during the Olympics. The project won the Royal Australian Institute of Architects' (RAIA) national award for public architecture in 1998.

Stadium Australia (above right), designed by the Sydney firm Bligh Voller Nield with London's Lobb Partnership, is already in use and has proven efficient in handling crowds. It has also been criticized by architect Peter Tonkin (who designed the Olympic Boulevard's lighting pylons) as "not exhibiting a mastery of its geometry or scale" and by architect Philip Cox (who designed the Aquatic Centre) as "not breaking new ground, and not iconic enough."

The buildings that have been uniformly well received are among the more minor ones, designed by Sydney's smaller, more cutting-edge firms. Among the most quirky are the amenities blocks by Durbach Block Murcutt, three splashes of color in an otherwise muted environment. The smoothly contoured structures have red, yellow, and blue steel portals that are covered by translucent fabric and glow at night like beacons. The archery center, by Stutchbury & Pape, has been described by Professor Leon van Schaik of the University of Melbourne as a "little miracle . . . economic, graceful, and witty [is] the twist in it which mimics the way arrows move toward targets."

Much effort has also gone into landscaping and tree planting. Greenery is beginning to soften the newness and bleakness of the site, and there are great hopes that this effect will be augmented as the trees mature. *Anne Susskind*

ARCHITECTS PLEAD GUILTY IN NEW YORK BID-RIGGING SCANDALS

In the latest phase of an investigation by Manhattan District Attorney Robert Morgenthau, 31 architects, real estate brokers, and construction managers pleaded guilty in October to bribery charges relating to bid rigging on a range of New York City construction projects. The pleas are part of a five-year investigation into corruption in the $6 billion interior construction industry, in which consultants, brokers, architects, and contractors conspired to rig the bidding for work at the offices of some of the city's most prominent corporations, according to investigators.

Last year, five of the largest contractors in the industry, including Structure Tone, Bennis & Reissman, and AJ Contracting, pleaded guilty to corruption charges. In one instance, nine architects, property managers, and project consultants admitted to taking bribes from Structure Tone in exchange for giving the company work at the IBM offices in White Plains, as well as many projects in Manhattan. Investigators have said that as many as a dozen other construction executives and architects could soon be indicted on bid-rigging charges.

All the architects who pleaded guilty have been sentenced to probation and have been ordered to pay fines. New York State is starting proceedings to revoke architects' licenses due to the felony convictions. In addition, the AIA's National Ethics Council will decide its own penalties based on the seriousness of the activities, which violate the AIA's code of ethics. ***Soren Larson***

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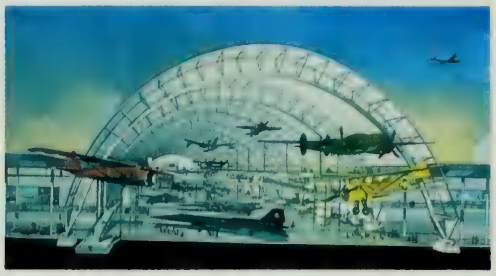


NEW SMITHSONIAN PROJECT GETS GO-AHEAD AFTER BIG PLEDGE

The Smithsonian Institution's National Air & Space Museum expansion project, the Dulles Center, got a big boost recently with an astounding pledge of $60 million from Hungarian-born businessman Steven F. Udvar-Hazy. The design, by Hellmuth, Obata + Kassabaum (HOK), was presented in 1998, but had been on hold until the site was finalized and legislation was passed to authorize federal funds for the project. HOK is also the architect of the Air & Space Museum's primary facility built in 1976 on the National Mall in Washington.

The Dulles Center will provide more than 700,000 square feet of exhibition space on a 17-acre site at the southeast corner of Dulles International Airport, in northern Virginia. Estimated to cost $130 million, construction should be completed by fall 2003, the centennial of the Wright brothers' flight at Kitty Hawk.

The Air & Space Museum, the most popular of the Smithsonian's museums, has been in the process of creating a second museum for more than a decade. The museum has been limited in displaying large parts of its collection; many items have never been exhibited and are stored in an antiquated warehouse in Suitland, Md.

The proposed structure will display the Space Shuttle *Enterprise*, an F-4 Phantom fighter, and the B-29 Superfortress *Enola Gay*. Visitors will move through various levels of the vast hangars by way of skywalks, which will allow multiple views of rockets, various types of aircraft, and satellites. Restoration workshops, a large-format theater, a restaurant, and library facilities are also planned. *Ellen Palmer Sands*

IT FORUM SETS STAGE FOR DIGITAL REVOLUTION IN BUILT ENVIRONMENT

The AIA-sponsored "Critical Issues Forum" last month left the abiding impression that the impact of information technology (IT) on the built environment—particularly on higher education, the courts, and retailing—is so radical and rapid that its effect on even the near future is largely unpredictable.

"Pervasive, profound, more positive than pernicious," is how Todd S. Phillips, AIA, director of the AIA's Center for Advanced Technology Facilities Design, described IT. William Mitchell, FAIA, dean of MIT's School of Architecture and Planning, sounded the forum's prevailing theme: IT is simultaneously causing a "radical breaking of bonds and reconstituting them in new ways." IT's decentralizing effect already allows people to work, bank, and shop from nearly anywhere at any time. And by recombining work and home, IT creates new neighborhood patterns: "finer-grained urban neighborhoods, a reinvigoration of humane, preindustrial models," said Mitchell.

Saskia Sassen, author of *Globalization and its Discontents*, saw a similar fragmentation and reconcentration, but for different reasons. Globalization makes business more complex and prone to risk, she said, and corporations are outsourcing the most specialized and difficult work, while concentrating their hold on information.

Speaker David Sebring, a market intelligence manager for IBM, said that Harvard, Duke, Berkeley, Penn, and other universities are racing to put courses online. He also noted that research universities are partnering with local business, government, and corporations to spawn incubator businesses. Added Mitchell: "You might think the learn-anywhere-anytime phenomenon would diminish the university as a place. But most universities are mixing interactive learning with intense human interaction, and MIT has its biggest building program ever."

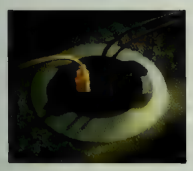
Classrooms will have to accommodate two or more student-centered, IT-supported learning experiences at a time, said Richard Rittelmann, FAIA. He cited flexibility as the architect's most valuable design asset, and he warned not to expect one plan to fit all needs, not to wait for the next technology, and not to forget to budget for replacement furnishings and equipment. On his "do" list: provide acoustically zoned areas, movable furniture, increased storage, measures to reduce glare, and indirect lighting.

IT poses at least one conundrum for the judicial system, said Fred Lederer of the College of William and Mary: "There are already some 100 high-tech U.S. courtrooms, and you can hold a trial where no one's in the same physical place, but that doesn't mean the public or judge find it acceptable. There are differences between what we can do and what we should do." It was accepted, however, that courthouses of the future will need to adapt and that courtrooms will have to accommodate banks of electronic monitors, televisions, cables, and other hardware.

Burgeoning E-commerce, speakers agreed, is scattering some retail functions, centralizing distribution, and recreating small-scale shopping districts of restaurants and specialty shops. This won't mean the disappearance of malls, said Ezra Ehrenkrantz, FAIA. They will be reinvented to furnish one-stop family outings for a population that has increasingly less leisure time—an unintended consequence of the IT revolution. *Andrea Oppenheimer Dean*

OLD SAN FRANCISCO WAREHOUSE TURNS INTO AN OFFICE WITH A VIEW

The 68-year-old C&H Sugar warehouse on San Francisco's Pier One, which extends 700 feet into San Francisco Bay, is being converted into a 151,000-square-foot office building, encircled by a public promenade, with stellar views of the city. The $38 million conversion is the start of a redevelopment of the city's waterfront that will include illuminated sidewalks and other amenities. The architect, Simon Martin-Vegue Winkelstein Moris of San Francisco, will maintain the structure's industrial character but will work to enhance views; for instance, loading doors will be turned into massive windows. Completion is slated for December 2000. *S. L.*



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NEW SHIPS RIDE HIGH-DESIGN WAVE

The Walt Disney Co. launched its second cruise ship, the *Disney Wonder,* in October with a full range of design styles onboard. The boat, created by a group of European and Scandinavian architects (the initial winning design was by Norwegian Robert Tillberg along with Disney Imagineering), is 964 feet long and 106 feet wide, contains 875 staterooms, and has room for a 919-person crew. The look is meant to evoke the classic steamers of the 1930s, with details such as round portholes, tapered ends, and two roof towers (most modern ships have just one).

Inside, Disney called on a trio of New York City designers to provide a variety of eating and entertainment destinations. Adam Tihany designed the flashy, Art Nouveau entry lobby (above), as well as the Triton restaurant. David Rockwell fashioned the Animator's Palate and several nightclub areas, while Marty Dorf did the upscale Palo restaurant.

Last month, Royal Caribbean cruises launched the *Voyager of the Seas,* which it claims is the largest cruise ship in the world. Boston architecture firm Wilson Butler Lodge designed the two main entertainment venues, including the first ice rink ever built on a cruise ship and La Scala, a 1,350-seat theater. The firm has also designed theaters for the Celebrity Cruise Line's *Millennium* ships. *S. L.*

IN FITS AND STARTS, CHARTER SCHOOL FOR DESIGN OPENS DOORS

The nation's first charter high school with an architectural theme, which opened this fall to some 400 Philadelphia area students, is off to a shaky start—though its organizers remain optimistic that the venture will succeed.

The Architecture and Design Charter High School, located on a 26,000-square-foot floor of an office building near Independence Mall, is heavily supported by the Philadelphia chapter of the AIA and by local architects who have devoted considerable time and some $60,000 so far in donations, along with loan guarantees to help renovate the formerly vacant facility. Five of the school board's 11 members, including its chairman, are AIA members.

Unforeseen problems

Classes began on September 13, but with construction complete on only 5 of the 18 planned classrooms, a barely adequate lunchroom, an incomplete security systems, and no firm procedures to enforce dress codes or discipline, the school's leaders abruptly shut down the new school for two weeks in October following resignations by several teachers and headline-grabbing student fighting outside school.

"Physically, we weren't ready to conduct school," says school board chairman Donald R. Matzkin, a principal of Friday Architects/Planners, who blamed the early chaos and closure on the scant time permitted by the state's charter law to create new schools from scratch.

"We had a principal who had never been a principal or participated in a school start-up," Matzkin adds. "So we were naive in setting up an appropriate system."

Like more than 1,700 charter schools that have opened across the country since the first one opened in Minnesota in 1992, the Architecture and Design Charter High School receives public education funds for every student it attracts, but is free of many of the regulations that some believe inhibit ordinary schools. It must, however, demonstrate its stability and educational worth to renew its charter, which under Pennsylvania law expires after about five years.

Sandy Garz, executive director of the Philadelphia AIA, says plans are afoot to offer students internships with area architecture firms and building contractors, as well as to use the city itself as a living laboratory.

Back in business

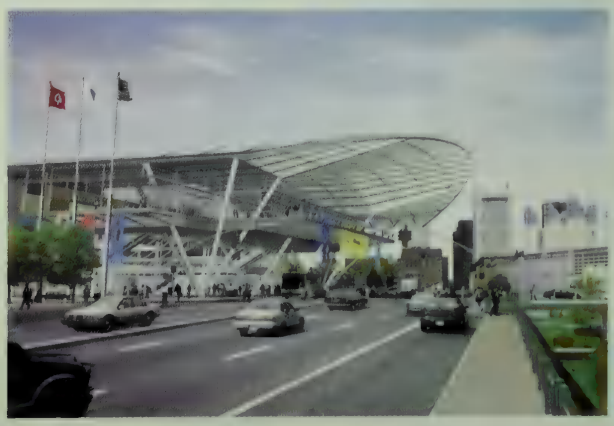
The school reopened on October 25 and Matzkin and Garz now say that the school's worse-than-expected start-up problems are largely behind them. Classes that lacked walls, carpeting, and computer wiring have been completed, and lunchroom renovations are proceeding. A veteran administrator has replaced the original principal, stability has been restored to the teaching staff, security issues have been addressed, several unruly students were "counseled out" of the program, parent involvement is being more actively courted, and fewer than 20 parents withdrew their children as a result of the temporary closure.

Future priorities

Development curricula and training teachers in the various schools of design thought remain key unmet challenges, concedes Matzkin. Architecture-oriented subjects such as drafting and 3-D design are appendages to the curriculum rather than integral parts of it. "One of my motivations," he says, "is to incorporate into our curriculum visual problem solving, which is absent from most schooling."

While Philadelphia has the first charter school focused on architecture, Miami has had a public high school devoted to the topic since 1992. The Design and Architecture High School, in Miami's Design District, educates students in industrial design, fine arts, and fashion design, as well as architectural design and theory.
Lee D. Mitgang

VINOLY DESIGNS A CONVENTION CENTER FOR BOSTON BAY SITE **Rafael Vinoly Architects, which recently won a competition to design a new convention center on the waterfront in Pittsburgh [April, page 58], is doing the same for Boston. The Boston Convention and Exhibition Center—a huge, 1.7 million-square-foot, $700 million project—will be built on a 60-acre site in the city's South Boston Waterfront District, an area undergoing extensive rehabilitation by the city. The most striking feature of Vinoly's design is a curving, stainless-steel-surfaced roof that will jut over the various exhibition spaces and create a shining presence visible from around the city.** ***S. L.***



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MAJOR EUROPEAN OPERA HOUSES GET NEW DESIGNS AND NEW LIFE

European operagoers, rejoice! A trio of classic opera houses has been restored and expanded, with new productions at the revamped venues starting this fall and winter.

London's finest

After three and a half years of construction, the Covent Garden Opera and the Royal Ballet triumphantly returned to their refurbished 1868 home in London (right) on December 1. The reconstruction of the opera house was one of the most ambitious ever undertaken for a cultural facility.

The architect, Dixon Jones BDP, restored the auditorium's Victorian splendor (designed by E. M. Barrie) while altering the floor's rake to improve sightlines, tuning surfaces to achieve a drier sound, updating the seating plan to improve comfort, and adding seats, which now total 2,250. Also, the auditorium now has its first air-conditioning system, says Charles Broughton, the project director.

Floral Hall, an 1858 glass-covered building abutting the opera house, was pressed into service as a multilevel expansion of its cramped foyer and lobby space. New escalators and elevators make most of the auditorium accessible to the disabled for the first time. More new construction houses vastly augmented back-of-house facilities, six new ballet studios, and a 400-seat studio theater. The architects wrapped the new construction in an arcaded band of retail, facing the historic square occupied by the Covent Garden Market, first laid out by Inigo Jones in 1641.

For a time, completion of the $325 million project was threatened by an internal management crisis—now said to be resolved—which was exacerbated by the stresses of a capital campaign and the scattering of resident companies to temporary quarters.

Setting the stage in Paris

Paris' Chatelet Theater reopened in October following a complete renovation of its stage, where Nijinsky danced to Diaghilev's choreography and Debussy created *Le Martyre de Saint Sebastien*. The year-long, $12 million renovation involved the modernization of the stage facilities (opposite left), most of which are invisible to the public but essential for an international theater hoping to attract the best new productions.

The project included an entirely new metallic infrastructure, greater fire protection, improving sound insulation, and the computerization of motorized pulleys, lighting, and set changes. The entry lobby was also restored and cleaned. The

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Italian-style theater itself had been renovated 10 years earlier.

Chatelet was inaugurated in 1862 and is considered a historic monument. Contemporary theater productions require a greater flexibility of set movement than that offered by the 1862 structure, so the technical grid—the false ceiling from which several tons of equipment is suspended—was raised to allow more operating space, and a new technical grid was installed over the backstage area. The lateral supports were lengthened by narrowing the bridges—open metal gangways—to each side of the stage. Technicians will have to operate in a narrower space but the addition of more bridges will give them greater access. A computerized system will allow 24 different set or lighting maneuvers at the same time. The most delicate operations will still be done manually.

New life for the Liceu

Barcelona is often in the news for its trend-setting architecture and urban design, but no contemporary work of architecture has been as enthusiastically received by Barcelonans as the recently reopened Grand Theater of the Liceu (above right), the city's historic opera house, which was gutted by fire in January 1994. Since it was first built in 1847 on the Ramblas, the main street of the medieval quarter, the Liceu has been the center of upper-class social life, Spain's leading musical institution, and an important part of the city's identity.

The theater that was inaugurated in October is a meticulous reproduction of the original, built by local architect Josep Oriol Mestres after a fire in 1861. Only the stage curtain, designed by fashion designer Antonio Miró, and the ceiling rosettes, by created by local artist Perejaume, add a contemporary note. Backstage facilities, however, have been completely modernized, following a renovation plan developed by architect and historian Ignasi de Solà-Morales before the 1994 fire. (Solà-Morales was also responsible for the 1986 reconstruction of Mies van der Rohe's Barcelona Pavilion.) The size of the building has nearly tripled, from 130,000 to 345,000 square feet, with expanded foyers, new basements and roof structures, and the expropriation of several neighboring buildings. The Liceu's $94 million cost was funded by national public institutions, with contributions from local businesses.

James S. Russell, AIA (London); Claire Downey (Paris); David Cohn (Barcelona)

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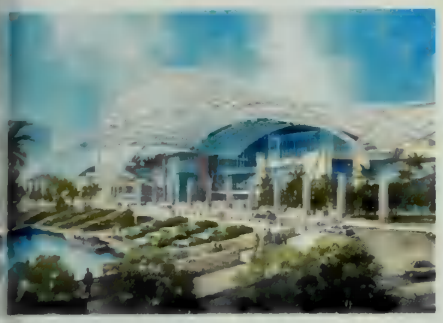
NEWS BRIEFS



Texas tangle Trouble's brewing at the University of Texas. After a complicated design process in which Herzog & De Meuron was sent back to the drawing board twice to rework its design concept, last month the Swiss firm resigned from its commission to build a new Jack S. Blanton Museum at the university's Austin campus. The architects decided they could not bridge differences with the regents' building subcommittee over the interpretation of the design with regard to the campus master plan. A week later, Lawrence W. Speck, dean of the School of Architecture, announced his resignation, citing disappointment over the circumstances leading to Herzog & De Meuron's departure. He will stay in the post until a successor can be found, and then will remain on the UT faculty. Herzog & De Meuron was awarded the commission in December 1998 and since then had favored nontraditional, one-story designs for the museum; the subcommittee asked, in July and October, that the architects reconsider and create a multistory building more in context with the aesthetic of the campus.

Getting out the vote In the November elections, voters approved most referendums that addressed issues such as overcrowding in public schools and historic preservation. As with the results of the 1998 election—when voters passed many antisprawl measures—the decisions indicate that "livable communities" may be a major issue for the 2000 presidential election. According to AIA analysis, every ballot initiative to preserve open space and historic properties passed voter scrutiny. Measures in Glendale, Ariz., raised $18.2 million, and in Colorado counties, voters approved tax increases to purchase open space. Similar measures were approved in Maine, Washington, and Florida. Among the notable failures was California's inability to limit development. About 43 percent of voters in Pleasanton and San Ramon voted for measures requiring voter approval of developer projects, while a Livermore measure to limit urban growth failed by fewer than 1,000 votes.

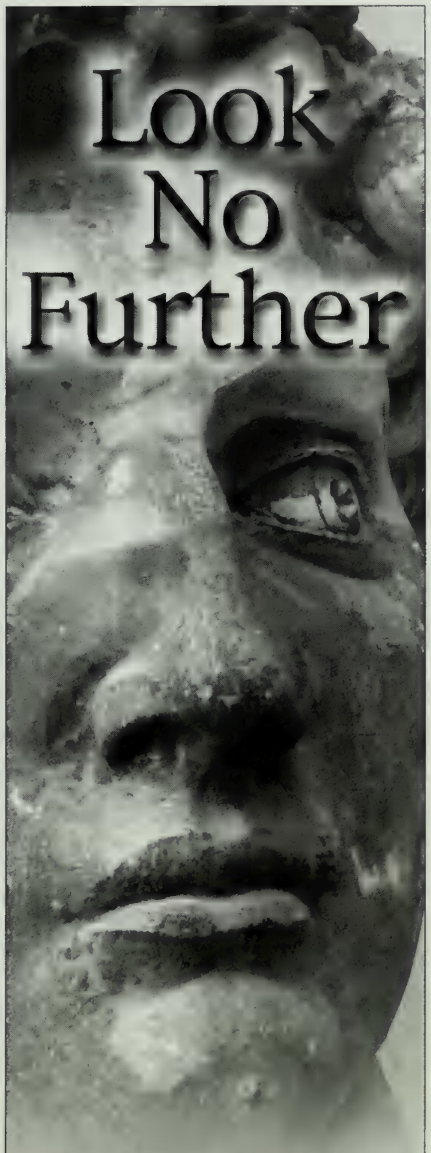
Laurels for Libeskind Daniel Libeskind's Jewish Museum in Berlin was awarded the German Architecture Prize in November in a ceremony at the museum attended by dignitaries including Johannes Rau, president of the Federal Republic of Germany. After accepting the 50,000-mark honor from the German Association of Architects, Libeskind spoke of working through "the vicissitudes of the past 10 years: six governments, five name changes, four museum directors, three window companies, two sides of the Wall, one unification, and zero regret."

Puerto Rican plans Puerto Rico hopes to soon draw travelers to a new convention center in a rapidly changing part of San Juan. TVS International has designed a new 600,000-square-foot facility (left) for a 110-acre site centrally located in the city and part of the Americas World Trade District, Puerto Rico's largest-ever waterfront development project. TVS and the architect of record, Jiménez+Rodriguez Barceló, will incorporate Puerto Rican heritage in the design by using local materials, patterns, and colors. The sweeping roof forms are meant to recall waves, while indigenous flora and fauna will be used to create an "urban forest" in the interior.

Budget battles White House and congressional negotiators have agreed on a budget for fiscal 2000 that includes a small across-the-board spending cut. On November 18, the House sent the package to the Senate, which approved it the next day. The legislation—which involves about $386 billion in spending bills—provides money for departments covered by five appropriations bills that proved too controversial to pass individually. Federal agencies will have flexibility in meeting the across-the-board cut, which equals 0.38 percent of their budgets. Before any across-the-board reductions, the General Services Administration's "new construction" and Department of Veterans Affairs' "major construction" categories already fell sharply from 1999 levels. The federal Bureau of Prisons facilities account was to receive a large increase.

Team Chicago The University of Chicago has selected Sasaki Associates to design landscapes for new buildings and quadrangles and Bruner/Cott Associates to renovate Bartlett Gymnasium as a dining commons. The university, which features work by Wright, Mies, and Saarinen, has recently signed up Cesar Pelli and Ricardo Legorreta to design new structures.

Kwan in command Architects talk a lot about needing to make their voices heard in civic settings.



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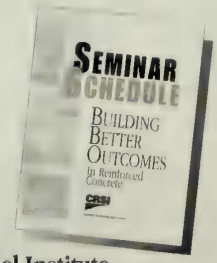

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Sylvia Kwan, FAIA, is acting on it: she was named chair of the San Francisco Chamber of Commerce in November. Kwan, president of Kwan Henmi Architecture and Planning, and a member of the chamber's board, will begin her term next year.

Pegasus flies again The winged horse that has ridden the top of the Magnolia Building in Dallas since 1934, but which has been dark for several years, will make a dramatic comeback on New Year's Eve. As part of the city's millennium celebration, the 35-foot-tall horse—long an icon of the skyline—will be dismantled, reconstructed of more durable materials, and relit on December 31.

Towering achievement The Hong Kong Town Planning Board has approved a design by Adrian Smith of Skidmore, Owings, & Merrill (SOM) for a 102-story building that will be built on a podium over the Kowloon Airport Railway. The 1,902-foot-tower will include a retail galleria, luxury hotel, office space, public observation deck, and restaurants. The design features a series of folding crystalline planes, each catching light at different angles, with a tapered vertical shaft.

Garden State gala Princeton University hosted AIA/New Jersey's Design Day 1999 in November. A gathering of architects—including Charles Gwathmey, FAIA, David Childs, FAIA, and homestate stalwart Michael Graves, FAIA—honored the winners of this year's design competition, which included two silver awards for the Newark-based firm CUH2A. In addition, panel discussions explored what motivates young-, mid-, and senior-career architects.

Hellmuth, Perriand die George F. Hellmuth, FAIA, cofounder of Hellmuth, Obata + Kassabaum (HOK), died November 5 in St. Louis at age 92. In 1955, Hellmuth; Gyo Obata, FAIA; and the late George E. Kassabaum joined to create HOK in St. Louis with 26 employees. The firm now has more than 1,600 architects, engineers, interior designers, planners, landscape architects, graphic designers, and support personnel in 24 offices worldwide. Hellmuth served as HOK's board chairman until 1979 and then was chair of HOK International Inc. until he retired in 1986.

Charlotte Perriand, a French designer who created influential furniture in the 1920s and '30s, died in Paris in October at age 96. During her long career, Perriand—who subscribed to the Modernist notion that furnishings and architecture should be developed as a single entity—designed chairs with Le Corbusier and Pierre Jeanneret, bamboo furniture in Japan, lobbies for Air France, workers' housing, and ski-resort interiors. ■

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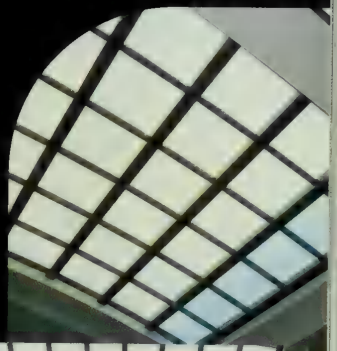

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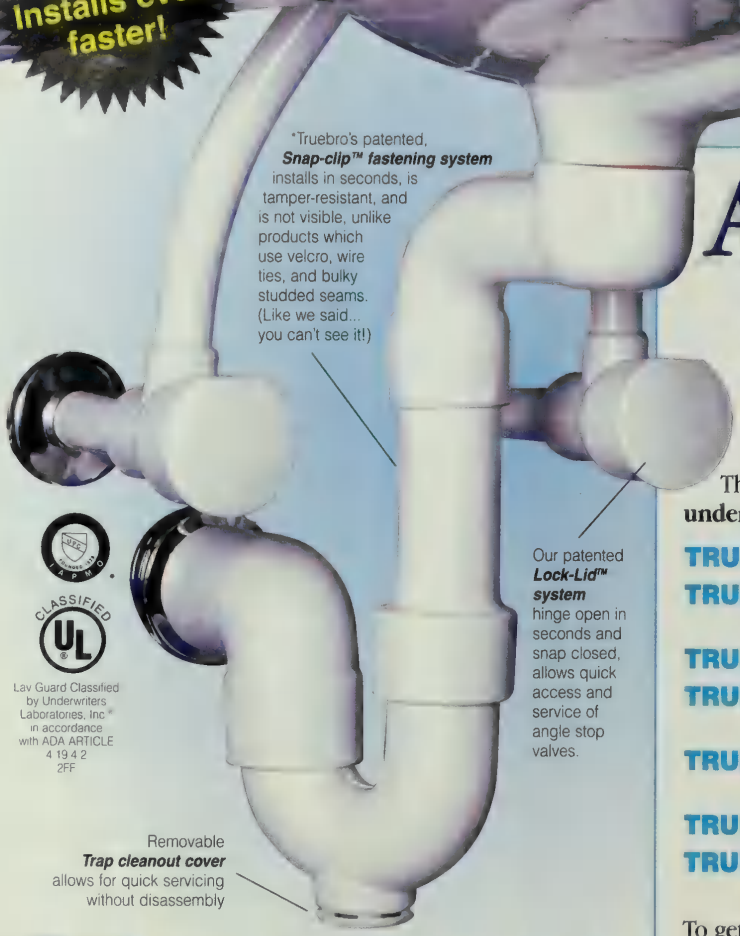

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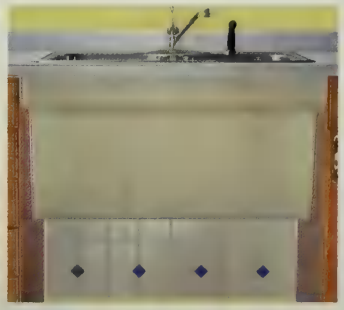

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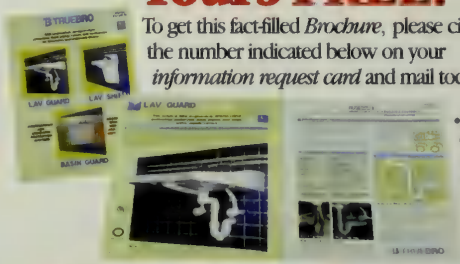

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A few clicks and the drama and vision of the architectural future appear before your eyes as conceived by nine brilliant architects commissioned by RECORD to design buildings for the new millennium.

Exclusively on architectural-record.com, Kurt Andersen, author of *Turn of the Century* stimulates with compelling images and commentary **in addition to those published in the December issue.**

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'It's easy to be green' with **The Green Architect**'s coverage of green issues, sustainable design, and newly built structures that respect the environment. A fertile resource, green products are evaluated for durability, recycled content, and other attributes along with manufacturer information—making it **easier to choose products that are resource efficient. More green products** have been added this month.

LET'S GET DIGITAL

Rapid Prototyping, a process borrowed from industrial design, lets architects make scale models from computer files, fast! For December, **Digital Architect online** takes you there with the scoop on rapid-prototyping software products, applications, and **vendor contact lists**. Plus, past Digital Architect columns and high-tech product reviews and vendor listings keep you **connected to the data you need to fulfill your IT needs.**

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THAT'S ENTERTAINMENT! ONLINE

Form, in the era of fun, continues to inspire, to convey ideas, and to affect the emotions. Just for kicks, simply click Projects for the **inside track to the people and products** behind Times Square Studios, Terminator 2: 3D Attraction, and Cirque du Soleil.

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DATES EVENTS

Calendar

Constant's New Babylon
New York City
Through December 30
The first major U.S. exhibition of Constant Nieuwenhuys' magnum opus, an urban utopia imagined through models, paintings, films, and sound. The Drawing Center. 212/219-2166.

Big Buildings
New York City
Through December 31
This exhibition explores a dimension of the skyscraper just as impressive as its height: sheer volume. The Skyscraper Museum. 212/968-1961.

The Lamps of Tiffany: Highlights from the Egon and Hildegard Neustadt Collection
Wilmington, Del.
Through January 2, 2000
More than 45 objects provide an overview of the achievements in glass by the Corona, N.Y., workshops of the Tiffany Glass and Decorating Co. Delaware Art Museum. 302/571-9590.

The Work of Charles and Ray Eames
New York City
Through January 9, 2000
A retrospective of the work of these midcentury pioneers of design. Cooper-Hewitt, National Design Museum. 212/849-8400.

Landmark American Bridges of the 21st Century
Boston
Through January 28, 2000
Documentation of the design and engineering of seven major American bridges currently under construction or in their final design phases. The Architects Building/BSA. 800/662-1235.

Rambusch: The Art of Craft
New York City
December 7 to January 1, 2000
A look at 100 years of the interior arts produced in the Rambusch family's lighting studio and workshop. National Arts Club. 212/475-3424.

Cedric Price: Mean Time
Montreal
Through February 27, 2000
On exhibit are the often humorous unbuilt projects of English architect Cedric Price, whose work explores how architecture can adapt itself to new uses over time. Projects include an abandoned railway line converted into a roving university and a demountable house for an archeologist. Canadian Centre for Architecture. 514/939-7000.

Triumphs of the Baroque
Montreal
December 9 to April 9, 2000
An exhibition of European architecture, 1600-1750, highlighted by 30 large-scale architectural models. The Montreal Museum of Fine Arts. 514/285-1600.

At the End of the Century: 100 Years of Architecture
Chicago
December 19 to March 12, 2000
A traveling multimedia exhibition highlighting major trends in 20th-century architecture. Museum of Contemporary Art. 312/280-2660.

A Century of Design, Part I: 1900-1925
New York City
December 14 to March 26, 2000
The first in a series of exhibitions surveying 20th-century design of furniture, metalwork, glass, ceramics, textiles, jewelry, and drawings. The Metropolitan Museum of Art. 212/535-7710.

Art Deco Festival
Miami Beach
January 10–16, 2000
A festival celebrating the 75th anniversary of the 1925 Exposition Internationale des Arts Decoratifs et Industriels Modernes. There will be guided tours of Miami Beach's Art Deco district, a collectibles street fair, films and lectures, and live music. For information, call the Miami Design Preservation League at 305/672-2014.

ICON 2000
Dallas
January 14–17, 2000
Over 70,000 construction industry professionals are expected to attend this year's event, which combines the International Builders' Show and the International Commercial Construction Exposition. Register online at www.BuildersShow.com or www.ICCON.com.

Material Evidence: Chicago Architecture at 2000
Chicago
December 11 to March 5, 2000
Guest-curated by Cynthia Davidson, this exhibition investigates how the use of materials drives contemporary Chicago architecture. Featured

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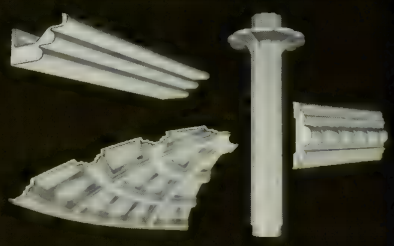

Design 1 is Formglas' new 60 page catalog showing architectural components with existing molds, including columns, capitals, domes, ceiling & wall panels, etc. All items available in Formglas G.R.G (gypsum), QuarryCast® and MetalCast®. Catalog can be sent by mail or viewed at www.formglas.com

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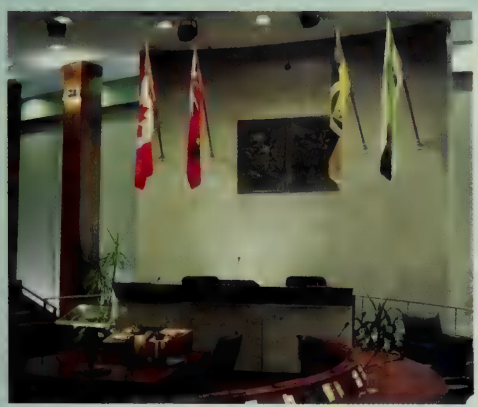

Design : Prizma Design for Hamilton City Hall

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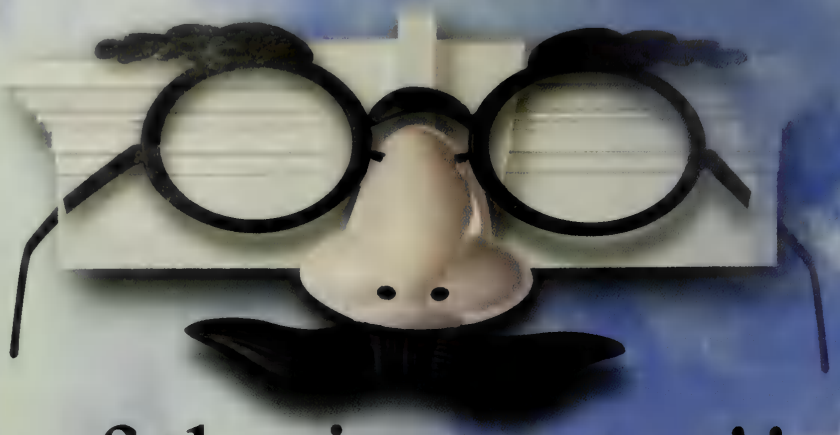

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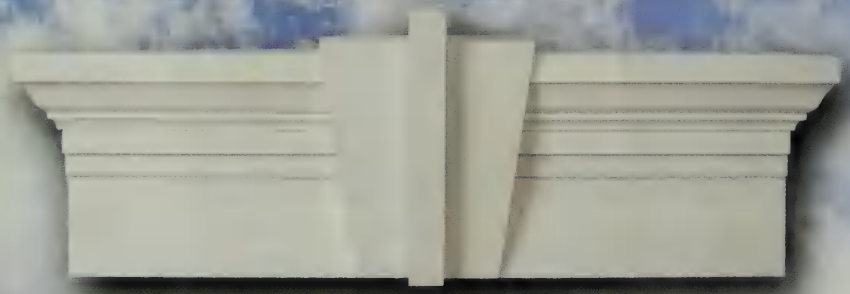

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contemporary Chicago architecture. Featured architects include Ron Krueck, Obi Mwazota, Carol Ross Barney, and Joe Valerio. Also on display are commissioned installations by Sarah Dunn/Martin Felson, Studio Gang/O'Donnell, Doug Garofalo, and Helmut Jahn. Museum of Contemporary Art. 312/280-2660.

Masonry Expo 2000
Las Vegas
January 17–18, 2000
The annual convention and and tradeshow for the masonry and paver construction industry. Las Vegas Convention Center. 877/627-3976.

Competitions

ALFA Best of Home 2000 Design Awards
Application deadline: January 7, 2000
Submission deadline: February 8, 2000
These awards honor assisted-living projects. Architects, interior designers, and assisted living providers may enter. Categories include interiors, new construction, renovation/remodeling, and Alzheimer's/dementia care. E-mail info@alfa.org.

The Rotch Traveling Scholarship
Application deadline: January 10, 2000
This $30,000 scholarship allows a young architect to study in a foreign country for up to a year. Eligible are U.S. citizens under 35 years old with at least one year of experience at a Massachusetts firm or an architecture degree from an accredited Massachusetts architecture program plus one year of professional experience anywhere. Visit www.rotchscholarship.org.

The James Beard Restaurant Design & Graphics Awards
Submission deadline: January 31, 2000
For architects and interior designers who exhibit excellence in restaurant design. Call 212/627-1064 or 212/645-3654 or visit www.jamesbeard.org.

1999–2000 Young Architects Forum
Submission deadline: February 18, 2000
This annual ideas competition, sponsored by the Architectural League of New York, is open to architects who have graduated from architecture programs within the last 10 years. Winners receive a cash prize and are invited to exhibit their work and present lectures in May and June. For an entry form, call 212/753-1722. ■

Please submit information for the calendar at least six weeks prior to the magazine's publication date (December 15 for the February issue).

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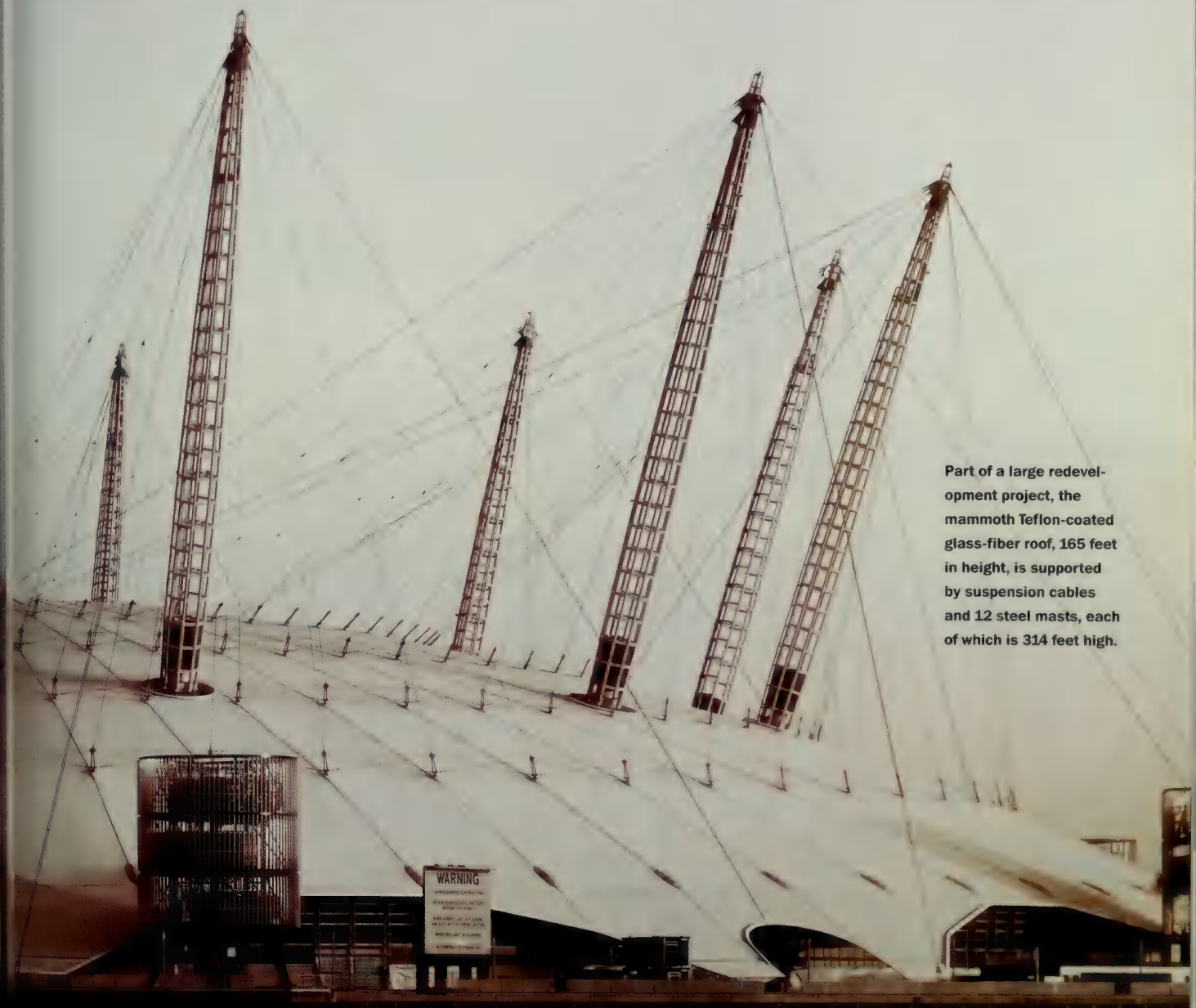
CIRCLE 44 ON INQUIRY CARD

Under One Roof

by Suzanne Stephens

The much-ballyhooed Millennium Dome is almost ready for the Big Moment. From the outside, the largest tensioned membrane structure in the world (20 acres in size) seems to float serenely over the former industrial wasteland of the Greenwich Peninsula, east of London. Inside, a last-minute frenzy of construction goes on, as 14 exhibition pavilions, or "zones," are rapidly nearing completion.

Designed by Richard Rogers Partnership with Buro Happold as consulting engineers, the 1,056-foot-diameter circular dome had long engendered debate about its contents. In 1997 the government-supervised New Millennium Experience Co. was charged with solving what became a thorny question. And so 14 corporate-sponsored exhibition zones are arrayed in pie-wedge fashion around a central arena where "The Millennium Show," replete with dancers and acrobats, will be staged five times a day. Because both the exhibitions and the show must appeal to a wide range of people, including children, the zones have been assigned such feel-good themes as "faith," "shared ground," "learning," and "money" (true!). Clearly, kitsch and superficiality hover over the spectacle of infotainment. Nevertheless, several of London's edgier architects were commissioned to design pavilions (although not necessarily the exhibitions inside). The results should intrigue some of the 12 million visitors expected during the year-long festival. In 2001 the dome will be up for grabs: bidders want to turn it into a sports arena, a film studio, or a cultural center. For now, however, the agglomeration of edifices under a fabric sky could illustrate the possibilities inherent in Bucky Fuller's futuristic vision for a city under one roof.

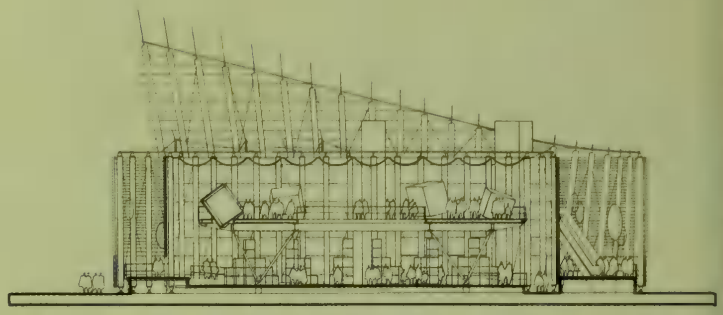


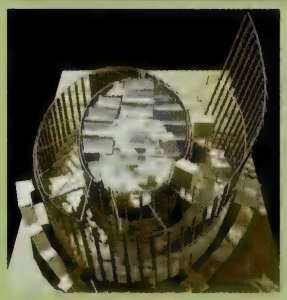
Part of a large redevelopment project, the mammoth Teflon-coated glass-fiber roof, 165 feet in height, is supported by suspension cables and 12 steel masts, each of which is 314 feet high.

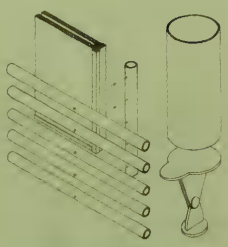
GUMUCHDJIAN & SPENCE WITH SHIGERU BAN

The clean, sculptural spiraling form of the pavilion for the "Shared Ground" exhibition is created from recycled cardboard. Devoted to an exhibition on the relationship between community and space, the paper building was designed by Philip Gumuchdjian and Stephen Spence, recent alumni of Richard Rogers Partnership, along with Shigeru Ban, the Tokyo-based architect known for his cardboard refugee housing in Japan. The three, working with Buro Happold on engineering and English materials research firm DCAB, came up with a cardboard structural system of tubular columns, mullions, louvers, and panels.

"We wanted to show that rubbish could be made into high-quality architecture," says Gumuchdjian. The cardboard for the spiral structure was donated by children in Britain and also came from industrial waste. Both short- and long-fiber paper was then spun into 100 columns, the secondary structural elements, and cladding. A steel deck and a steel ring beam provide extra stability.





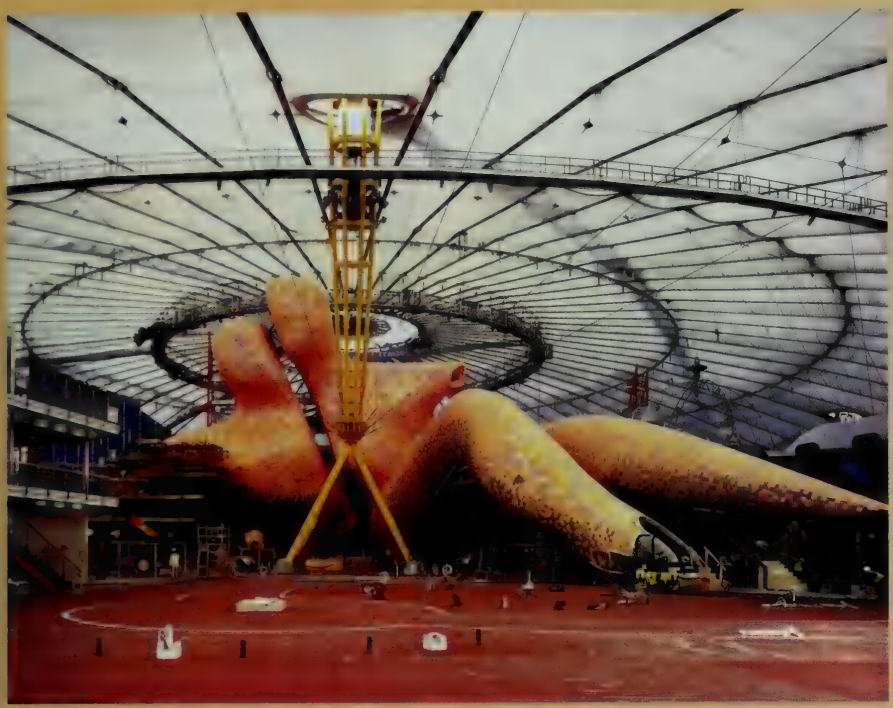


In the Shared Ground pavilion, recycled cardboard forms columns, mullions, louvers, and panels. The 15,000-square-foot structure ranges from 40 to 80 feet high.

ZAHA HADID

At 16,140 square feet, the Mind Zone is the largest project in Britain by Zaha Hadid's office. The steel structure, with timber-composite secondary trusses, was designed with Ove Arup as consulting engineer. Striking elements include a 79-foot-long cantilevered deck, a high entrance panel clad in a stretched mirrored material, and a continuous floor, wall, and soffit surfaced in lightweight glass-fiber-reinforced polymer panels. These panels are combined with aluminum honeycomb for the floors and laid over steel-stud construction for the walls and ceiling. Lit from behind, the luminous blue shape should provide an eerie backdrop for spectators parading through the 59-foot-high pavilion on a linear (but spatially varied) circuit.

Unlike the others, Hadid had control over the Mind Zone's content. With the help of art consultant Doris Lockhart-Saatchi, she selected a number of young artists to come up with installations for reflecting (and perhaps provoking) the mind's various thought processes.



The Body Zone, which looks like a Henry Moore sculpture through a psychedelic filter, has two levels.

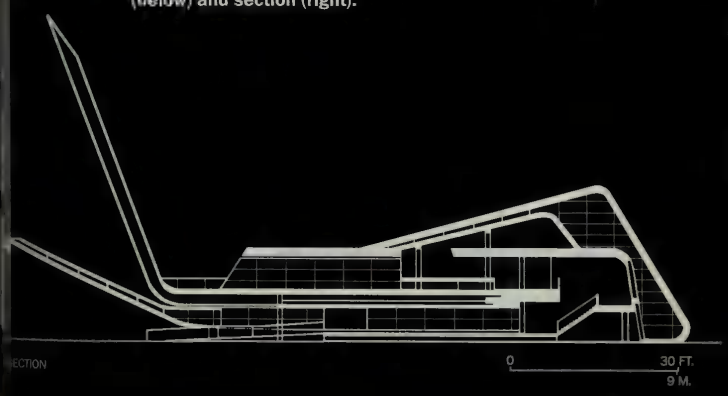
BRANSON COATES

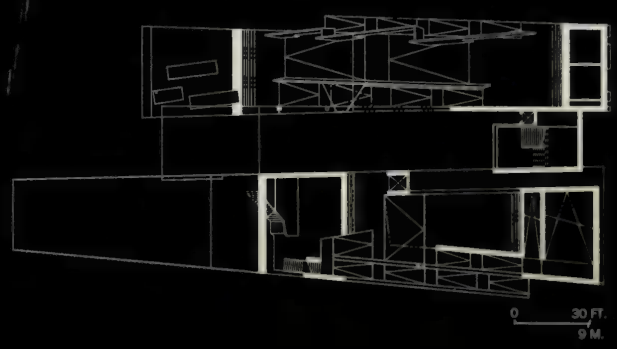
The flesh-colored forms of a large humanoid couple have given the Body Zone its particular identity. Visitors will roam through the abstracted innards, looking at exhibitions having to do with health, beauty, and lifestyle. While Doug Branson and Nigel Coates did not have control over the installation, the zooty vulgarity of the 84-foot-high structure easily makes it a showstopper.

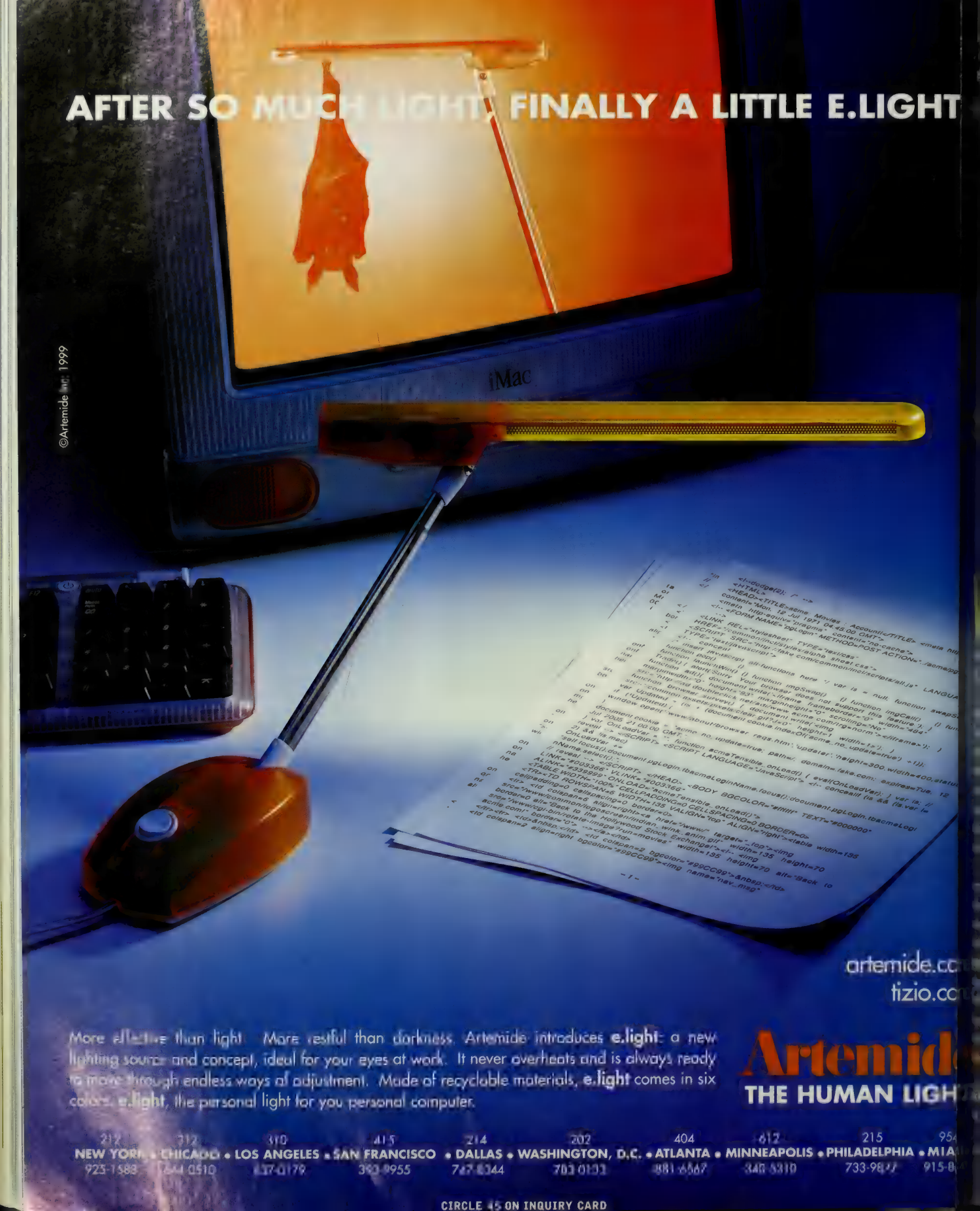
In the computer-generated pavilion, for which Buro Happold was consulting engineer, four steel tubes of different sizes run from the ground to the head and are attached to a heavy-duty steel platform. Bent-profile steel hoops, 189 in all, form the contours of the body. From the hoops extend 20-millimeter-thick steel bars, much like quills, whose ends are cropped to meet the contours of the skin. A mass of 10-millimeter-thick steel rods are welded to these ends, with a fine mesh tied to them.

A central tower helps support the structure, and elevator towers add stability. The skin itself is glass-fiber-reinforced concrete sprayed onto the frame, which in turn is surfaced in 83,000 iridescent plastic tiles ranging in color from blue to pink to yellow.

In the Mind Zone, visitors enter under a large screen of mirrored material and walk through the structure on a path that leads into open ramps and enclosed spaces, as seen in the plan (below) and section (right).



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PART TWO

Millennium Part Two: Futures to Come

NINE CREATIVE AMERICAN FIRMS JUMP-START ARCHITECTURE FOR THE 21ST CENTURY

What form will architecture take in the next one hundred years? For ARCHITECTURAL RECORD's Millennium Issue, Part II, we asked a group of young, innovative, American architects to come up with a range of schemes that address specific needs in the 21st century.

Forget sci-fi intergalactic extravaganzas. We sought designs that were both speculative and realistic. Therefore, we charged the nine U.S. firms selected with investigating new solutions for existing building types, from a high-rise apartment house to an office tower. We favored American architects outright. Because the work of architects in other countries receives so much attention today, the challenge was to see what our younger architects could produce if they had just the right clients (us!).

Not every building type is represented, and not every future problem is anticipated, but the schemes explore a number of solutions to social concerns by harnessing solar power, providing accessible housing for the elderly and disabled, and developing more efficient transportation systems. The designs suggest new applications for materials and technologies being developed in other industries. And no matter how unusual they are, the projects reflect a desire to create meaningful architecture, for dynamic and contemplative environments and for aesthetic quality.

To gain an outside perspective, we asked culture critic Kurt Andersen to comment on the sumptuous feast. What is served up is undeniably design for thought.

Suzanne Stephens and Clifford Pearson

Rendering from Kolatan/Mac Donald

ANALYSIS: Kurt Andersen checks out THE FUTURE

One morning, just before the end of the millennium, Kurt Andersen talked about the nine projects with RECORD *editors. What follows is an abridged version of that discussion.*

For better or worse, a consistent world is depicted in these projects, pieces of the future that go together. I was struck by the fact that after 25 years of Postmodern indoctrination, there is virtually no real flexing toward urban context. So many of the sites are out of the city, apart from the demands of the grid—on rivers, especially. There's an optimism, not any dystopian sense at all. (Maybe that's a function of the designers being asked by ARCHITECTURAL RECORD to describe the 21st century, and feeling it would be churlish to show rubble and fires.) But there is an almost old-fashioned, midcentury sort of giddy optimism about large structures and high-rises—that they are not just viable, but desirable, and that there will be plenty of money for grand public spaces and new museums.

A biomorphism runs through nearly all the projects, an expression of the organic not only formally and stylistically, but also in their speculative view of materials and technology. The architects imagined plastics and glasses and fabrics that mutate, and tiles connected by 100,000 sensors to a central computer so they can change form at will. It's interesting that when you put these architects in separate soundproof rooms, they come up with similar notions and form an ad hoc consensus.

We are still at an early moment of computer-driven design. In 5 or 10 years, once this tool has had more time to simmer in architects' consciousness, there won't be as many buildings that are so self-consciously blob-itecture. Right now architects are still marveling at the computer-enabled freedom of design, essentially saying, "Whoa, look at these forms I can do!" Most of these projects bear Frank Gehry's influence: post-Bilbao blobitecture, if you will. Flamboyantly computer-driven design is a great novelty today, which presumably it will not be in 10 or 20 years—and so it won't be so dominant stylistically.

Kurt Andersen, author of the novel Turn of the Century, *was* Time*'s architecture critic for eight years. He is working on another novel and a new Internet venture.*

We've had just 15 or 20 years to get comfortable with computers. The effects of this technology are still rippling out—not just in architecture, but in film, writing, all kinds of ways. We're still getting used to it. It's funny, just as the Reaganite optimism of the '80s was fading away in the early '90s, this digital revolution—which is truly a revolution and full of revolutionary optimism—suddenly made people, whatever creative profession they're in, awaken to the opportunities, the challenge, the excitement, and the terror of these new forms.

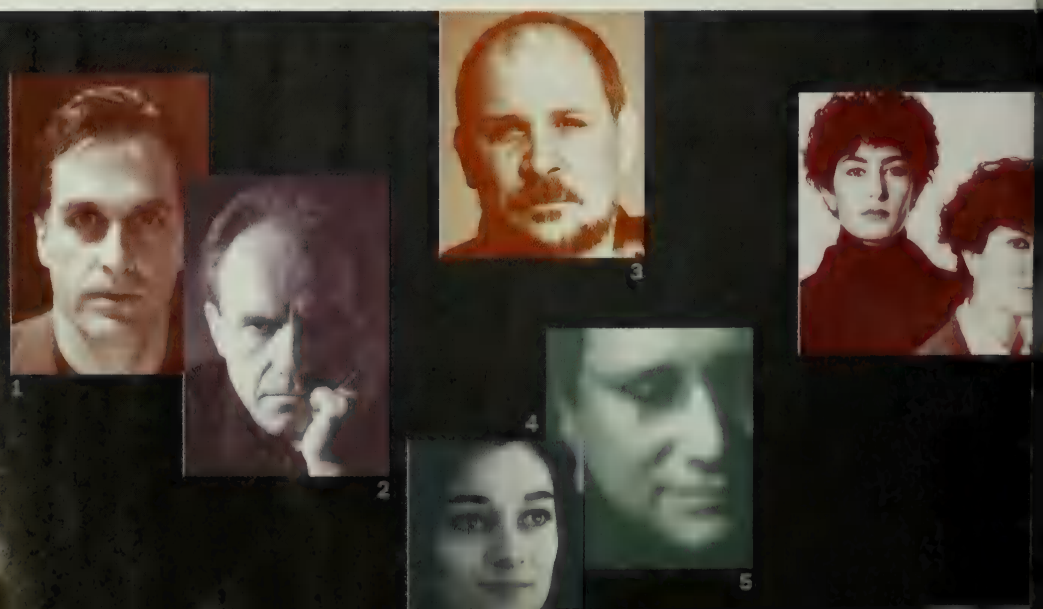
Several of these projects refer, in a vague way, to a post-Newtonian world. Whether the metaphor that the architects are attracted to is a quantum mechanical one or a biological, biochemical one, they're interesting metaphors—and maybe, in the biological case, more than mere metaphors. Mechanical technology really is beginning to intersect with manipulated biological processes. It's less of a science-fiction idea today than it was even 20 years ago, for instance, that building skins could be partly mechanical and partly biological.

On the other hand, none of the work here is utopian. Compared to the Modernist explosion of 70 and 90 years ago, none of these architects pushed his or her project in a left-wing, aggressively socially responsible direction. I don't begrudge them that, but it's interesting that none of these people said, "Well, we're going to make this housing for the poor." I don't think that would have been the case at any other time in this century among an equivalent group of architects. That is a measure of this moment in which we live. We're all Reaganites now—we all pretty much accept the ultracapitalist circumstance, and **any kind of squishy socialist utopian notion is off the table right now.** I don't think that will be the case forever. But the fact that these particular architects didn't venture there—even in these speculative projects—is telling.

The assertive social-welfare paradigm, which so informed Modernism at the beginning of the century, isn't informing this work. Some projects aren't even green, particularly. It's curious to see how familiar most of these images and forms are—to realize that today's ideas of the future are the same ones that were born in the '30s, '40s, '50s, '60s, and '70s. There is a contemplation of the future as a form of nostalgia. Where's that truly new vision—that equivalent of the 1904 moment where Cubism and mechanical speed suddenly, radically change the nature of aesthetic conception? Perhaps that will still happen. But you see a lot of Archigram and Bucky Fuller here. Where is something we've never seen before? Of course, that's asking for the

The architects who looked into their crystal balls for images of future buildings come from around the country. Although the two coasts are heavily represented, Tennessee and Chicago also contributed to the mix. *(For biographies see page 232)*

1. Mark Sexton
2. Ron Krueck
3. Coleman Coker
4. Sulan Kolatan
5. William Mac Donald
6. Mojgan Hariri
7. Ulrike Hariri



impossible. Occasionally, you get a Frank Gehry, but typically, most of culture has been recycling the past. Even when it comes time to imagine the future, the temptation to return to past visions of the future is irresistible. Maybe we can't get them out of our heads because of the degree to which the media and pop culture have embedded those visions in our brain.

To take just one example, the Michael Sorkin retirement community (page 96) seems to be a combination of the prehistorical and the posthistorical in one. *The Flintstones* meet *The Jetsons.* It's interesting that Sorkin, of all people, would choose to make a golf course the center of his retirement community, rather than conceive of something else that people of 65 will be doing 65 years from now. But the site is really interesting; this conception of a community as islands in the stream is a lovely one. And he shows a concern for green space in a pragmatic sort of way that none of the other participants has really grappled with.

One of the **great buzz phrases of the moment, thanks to the digital revolution, is "mass customization,"** which is what the Kolatan MacDonald tower (page 88) is trying to embody. Here, the architects imagine high-tech, mutable spaces where each module can change its orientation and shape to make interior and exterior spaces change almost infinitely. The building can refresh itself, remaining subtly but perpetually novel. With technology that will be developed in the near future, this is not so far fetched. The architects' critique of the old-fashioned notion of cookie-cutter Modernism, of Bauhaus pieces in a kit, is pretty astute.

Throughout the projects here, we can see how Gehry has become our Mies. Both impress us with their brilliance, their radically antihistorical form, the anxiety of influence they provoke among other architects, and the mediocrity of so many of their followers' work. We had 30 years of Miesianism, and now perhaps we'll have 30 years of Gehryism.

Another running thread is a reference to biological forms. In the Greg Lynn house (page 104), for example, the metaphor is of an embryo, something that grows and evolves. Rather than starting with the program—who's going to live here or the number of rooms—he started with a metaphor. It's a symbolic architecture, which you don't see much of.

A certain expressiveness is expected in projects like these, where they don't have to go into construction documents tomorrow. There's also a relatively new sense that this sort of expressive architecture is no longer just a dreamy theoretical possibility. Peter Eisenman and Gehry and others have demonstrated that with the technology that computers provide it's possible in the real world.

The recent development of digital technology raises all sorts of questions about the virtual realm. In the interiors of Asymptote's museum of technology (page 92), for example, **the architects try to show a collision of physical and virtual spaces.** It's an interesting idea, and one that will become real very soon. People spend more and more of their lives in these virtual realities—buying stuff online, meeting people online. In fact, virtualism may well lead to a desire for or a requirement for more vivid three-dimensional spaces. There's going to be a growing bipolarity between working in front of a 20-inch screen and going to grand spaces like this. What is also interesting about the Asymptote interior is that movement through the space is more important than stopping in any one place. You get the sense that real space is beginning to take its cues from virtual space. One's experience of this interior might be like channel surfing—architecture as constant flicking.

The project by Mockbee Coker (page 114) also does a good job of digesting the implications of technology, highlighting the notion that the city hall will no longer be the place where you go to perform all of your bureaucratic functions on paper, face-to-face. Those chores will be done digitally, and there will be a decentralized polity. So the city hall becomes a civic monument and one that isn't a football stadium.

A trap that some architects stumble into is consciously trying to express their time. It's easy to fall into a false choice between "This is a chaotic, disjointed time, so we're going to build a chaotic, disjointed village," and, on the other hand, "This is a disjointed time, therefore we will go slavishly to traditional forms." Both can lead to errors. The irregularities of modern life do not demand irregular forms. The Deconstructivist moment of a few years ago was essentially borne of that notion. Irregularity is fine, but don't tell me we ought to build irregular buildings because of the disjuncture and discontinuity of life.

The idea of mutability, which many of these projects share in program or construction, is interesting, because it undermines the idea of the author, the architect as author. Everything is fungible and changeable. But there is a question of whether we want to live that way, to design that way, even if it's possible to have endlessly mutating walls and ceilings. ■

WWW *For detailed commentary from Kurt Anderson about the commissioned projects, and more visuals, go to* **Projects** *at:* ***www.architecturalrecord.com***

8. Jesse Reiser
9. Nanako Umemoto
10. Tom Buresh
11. Danelle Guthrie
12. Michael Sorkin
13. Greg Lynn
14. Hani Rashid
15. Lise Anne Couture

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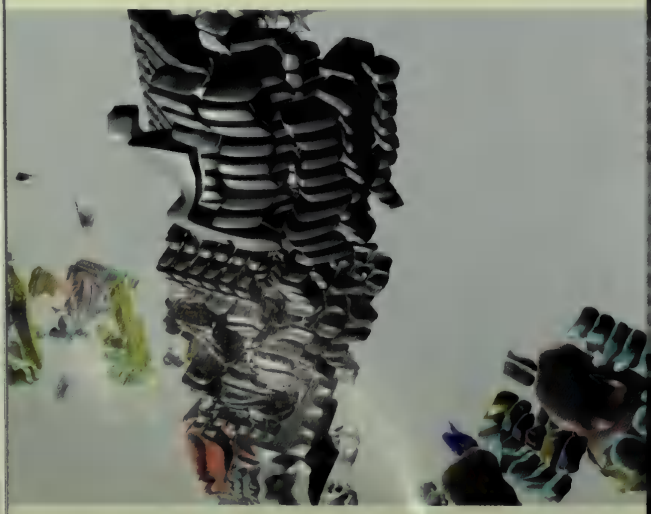
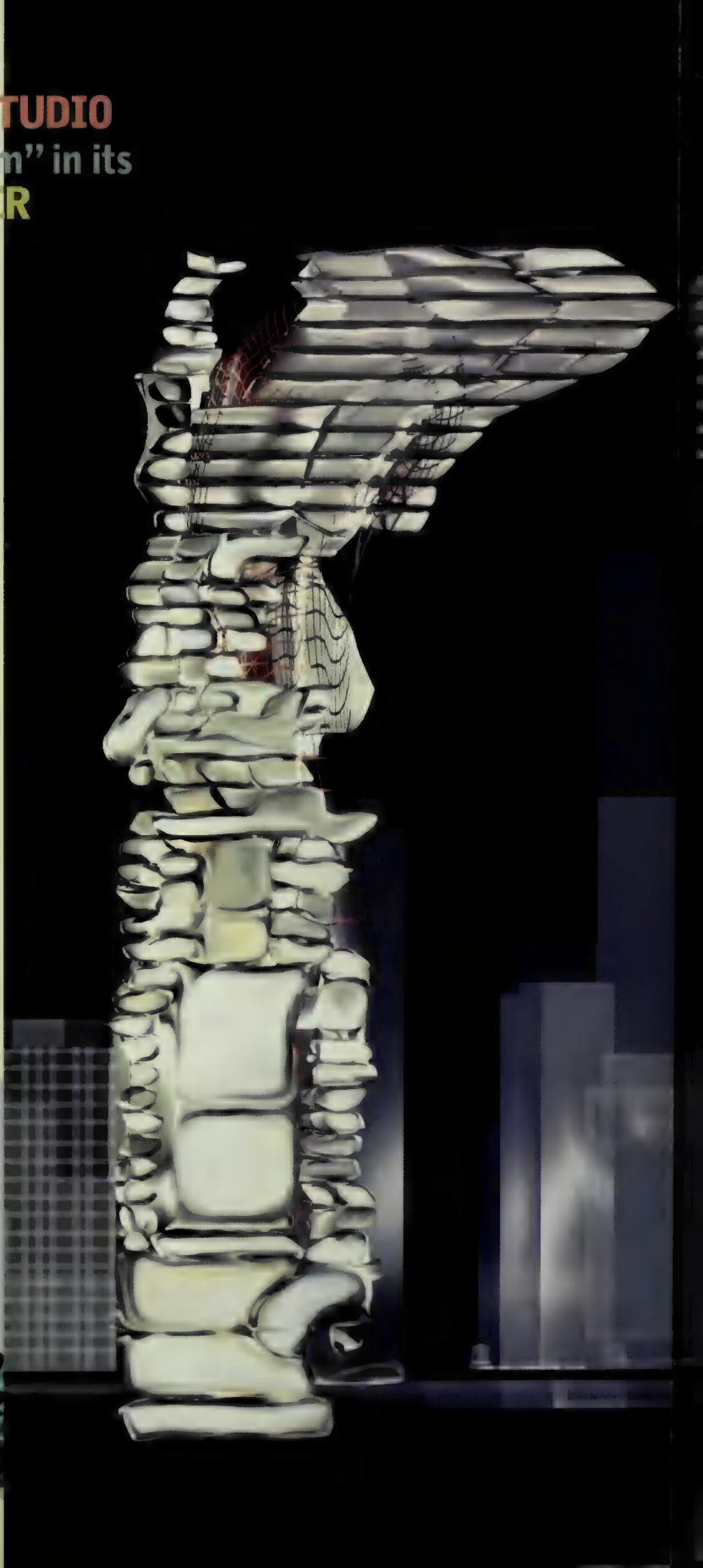
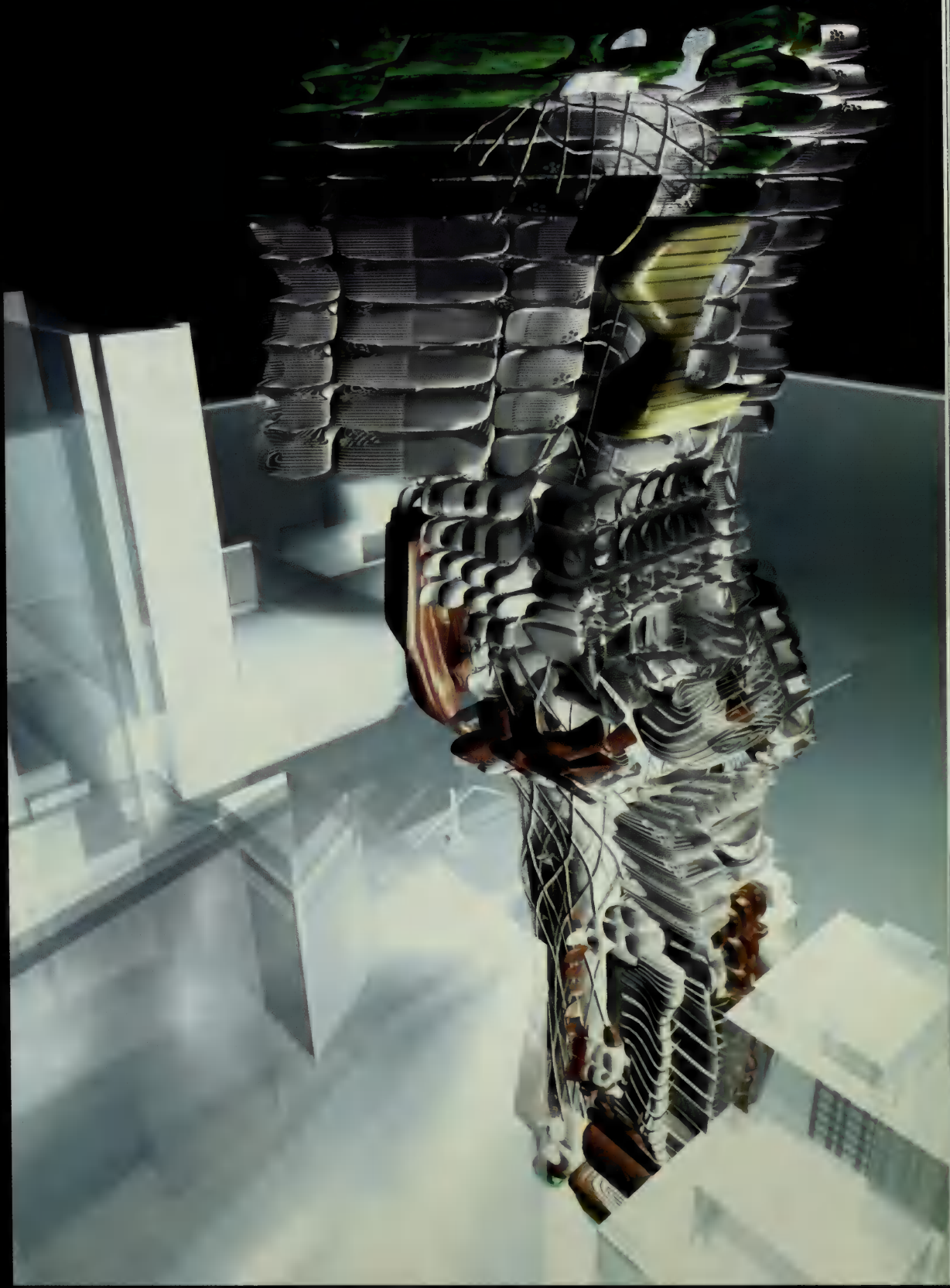
KOLATAN/MAC DONALD STUDIO creates "vertical urbanism" in its RESI-RISE SKYSCRAPER

Project: Resi-rise
Location: Manhattan's Columbus Circle, Central Park South corner
Architect: Kolatan/MacDonald Studio—Sulan Kolatan and William MacDonald, principals; Stefano Colombo and Jonathan Baker, design coordinators; Linda Malibran, Yolanda do Campo, German Rojas, Christian Ditlev Bruun, Anthony Burk, Beat Schenk, and Maria-Eleni Kosmidou, design team
Consultant: Buro Happold Consulting Engineers
Program: Residential hotel and offices for short- and long-term occupation with entertainment and retail facilities
Size: 51 stories; 44,000-square-foot base
Completion Year: 2005; roll-outs planned in other locations and cities
Design Intent: The Resi-rise was conceived less as a building and more as "vertical urbanism." Its frame, a 3-D matrix of "lots," is built to the maximum allowable zoning envelope, deforming in response to site influences, such as views and adjacencies.

Once the infrastructure and frame—a load-bearing structure of fiber-reinforced polymer composite







The massing of the Resi-rise tower is determined by the maximum allowable zoning envelope and site parameters such as views and adjacent setback heights.

components—are complete, individual rental tenants supply and inhabit their own "pods" without depending on full occupation of the building. Resi-rise's top and bottom levels—typically the most desirable real estate—would likely fill first, leaving the midsection free for later pods. This condition is akin to a new block with its infrastructure and first few residents in place—quite unlike a partially populated shell-and-core building.

The pods, made of a low-density core material, a high-density skin, and curved, laminated glass, contain plumbing, ventilation, and electrical/communications networks, which are linked up when the units are installed. Lifted into place by a permanent crane system, the pods are removed for recycling after use. Secured to the matrix, the pods play a structural role, supplanting load-bearing frame members.

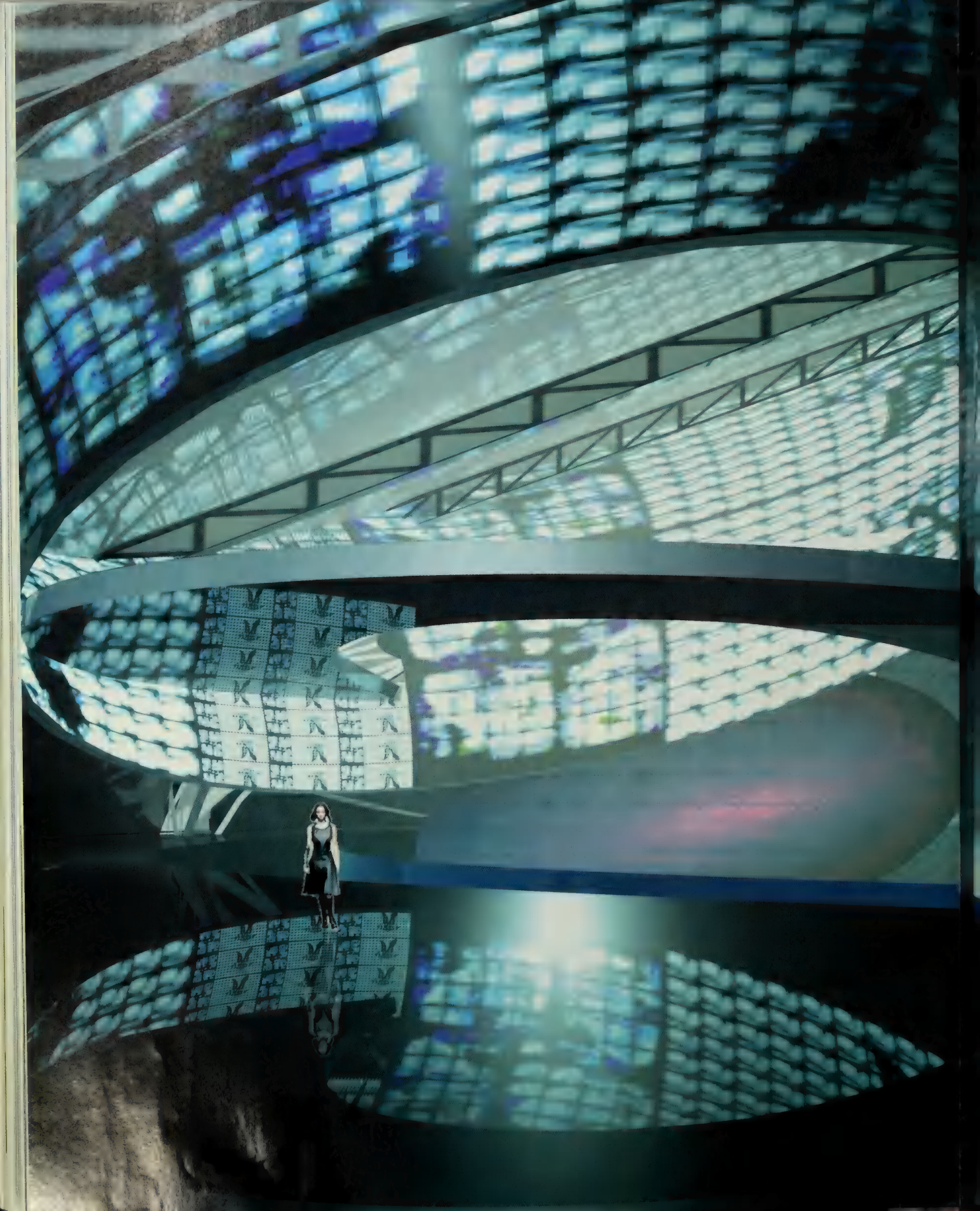
A lightweight industrial-grade fabric with transparent, translucent, and opaque areas wraps the frame. Elevator shafts run at angles, with skylobbies connecting to local escalators and stairs. Much of the building's electrical power is generated by thin-film on-site photovoltaics.

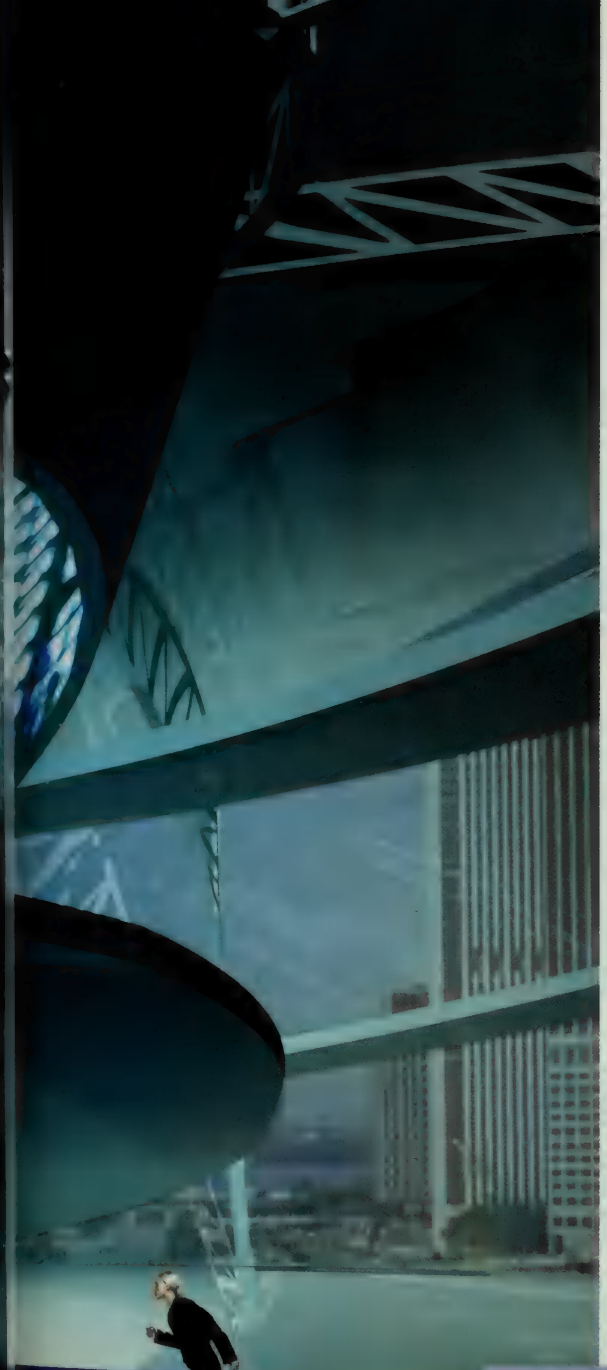
The pod morphology, size, programming, function, materials, and furnishing can be customized within Kolatan/MacDonald's parameters. Like a chimera, the Resi-rise merges multiple identities within a collective, unified system. Individual residents can influence the units' spatial distribution. With the removal of old pods after tenants leave, short-term scenarios become feasible. Groups can come and go with their own pods.

For the tenant, the pod is less like real estate and more like a leased car. The architects remain involved with their product by giving the owner/tenant the option of upgrading to the latest model as new materials and technologies emerge. Construction of the Resi-rise is thus open-ended.

Materials and Technologies: Plastics that undergo molecular restructuring with stress; smart glass that responds to light and weather conditions; antibacterial woven-glass-fiber wall covering; smart interior walls that control climate; and pultruded fiberglass-reinforced polymer structural composites

Resi-rise's rental spaces are contained within pods secured to a load-bearing frame of prefabricated fiber-reinforced composite components. Cores or rigid shaftways, with elevators and stairs, wend their way among the pods.





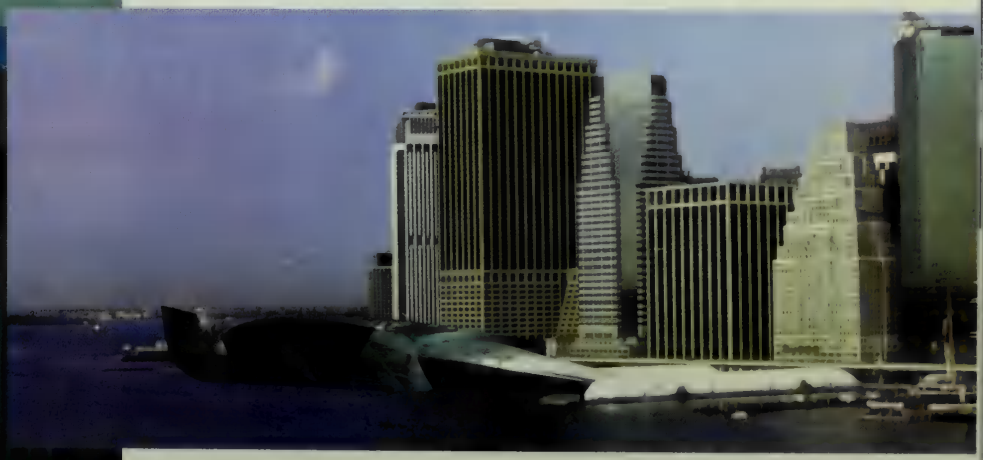
ASYMPTOTE envisions a sleek and dynamic MUSEUM OF TECHNOLOGY CULTURE

Project: Museum of Technology Culture
Location: Present site of East River Piers 9 and 11, Manhattan
Architect: Asymptote Architecture—Hani Rashid and Lise Anne Couture, principals; John Cleater, Noburo Ota, Florian Pfeifer, David Serero
Program: Large- and small-scale spaces for expositions and media events, a theater, education and administration areas
Size: Approximately 900-by-250-foot base; 500,000 square feet total
Completion Year: 2005
Design Intent: The Museum of Technology Culture was conceived as a hybrid structure merging the typology of a convention center with the utility of a hangar, the public-event character of a sports stadium, and the cultural programming of an art museum.

The museum focuses on late-20th-century technology in relation to the human condition. The concept traces origins in the early Machine Age, when such 19th-century buildings as Joseph Paxton's Crystal Palace anticipated a century of technological innovation setting the standards of progress.

The former providence of technology expositions has migrated to the sanctum of art museums—as evidenced, for example, by the New York Guggenheim Museum's exhibition of motorcycles on its famous ramps. The

Protruding into the East River (below), the museum extends Manhattan's urban density. The building is transformed as digital signals flash across its skin and its interior ramps (opposite) change configuration.



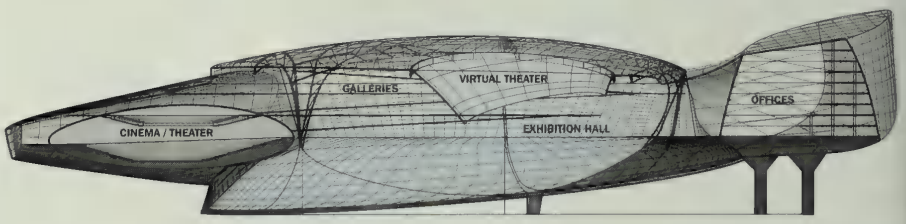
Museum of Technology Culture responds to such treatment of technology as art, and to the dematerialization and simulation of all aspects of culture through information technology.

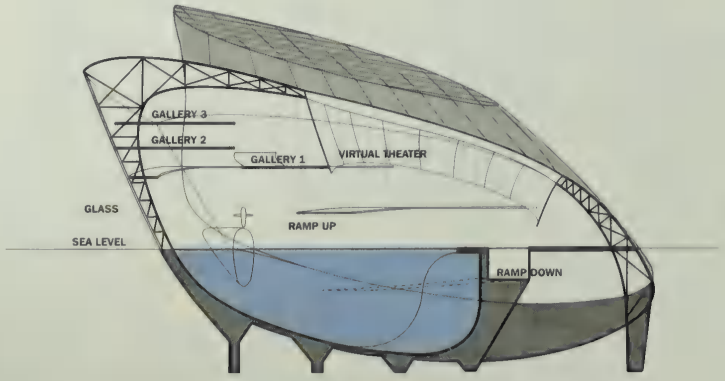
Unlike the Crystal Palace's fixed iconic form, Asymptote's museum is interactive. Its malleable interior can transform itself in plan and section: Its exhibition floor, for example, slides back to create an aquatic arena, and its meandering ramp can be reconfigured.

The structure is like a great barnacle, extending Manhattan's urban density. With LCD cladding, it can broadcast digital signals across its exterior surface. The building thus becomes a "real" physical entity, as well as an ephemeral mediator of information. This duality, like the urban condition itself, perpetuates a constant state of flux.

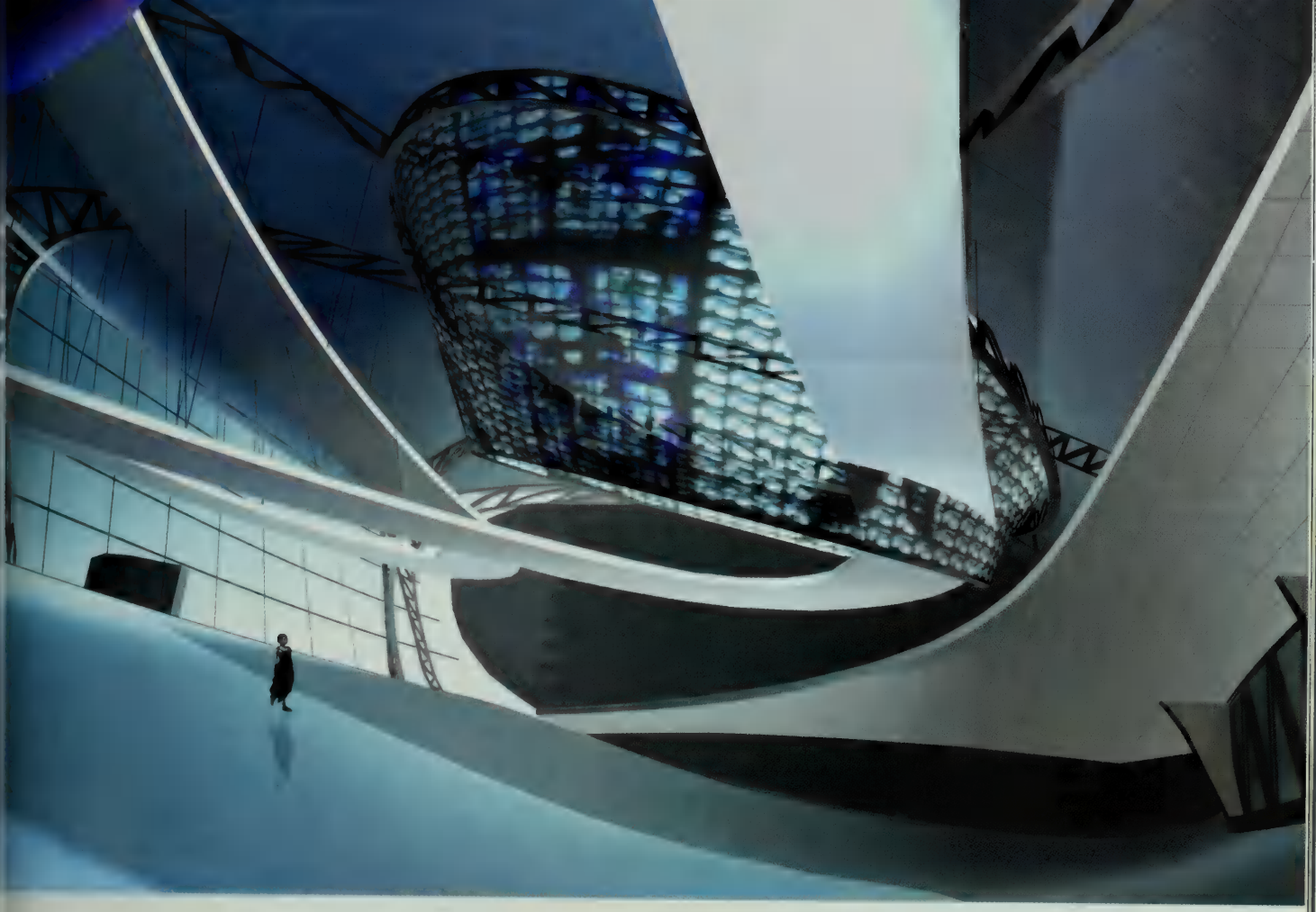
Materials and Technologies

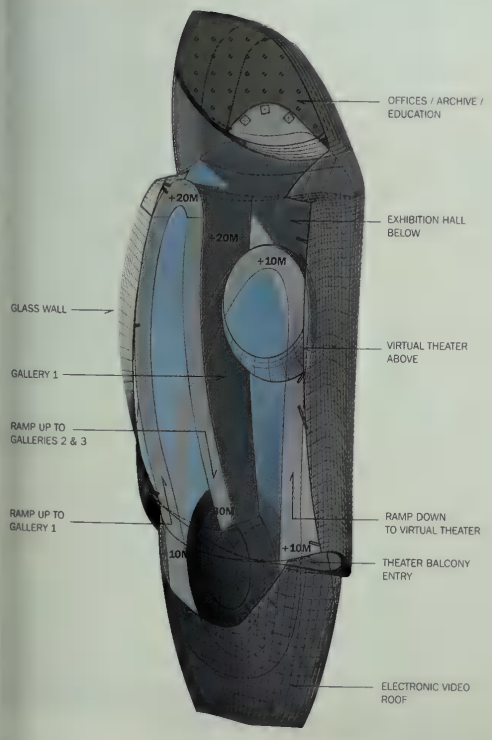
Computer-modeled and [illegible] fabricated lightweight structural [illegible] LCD cladding





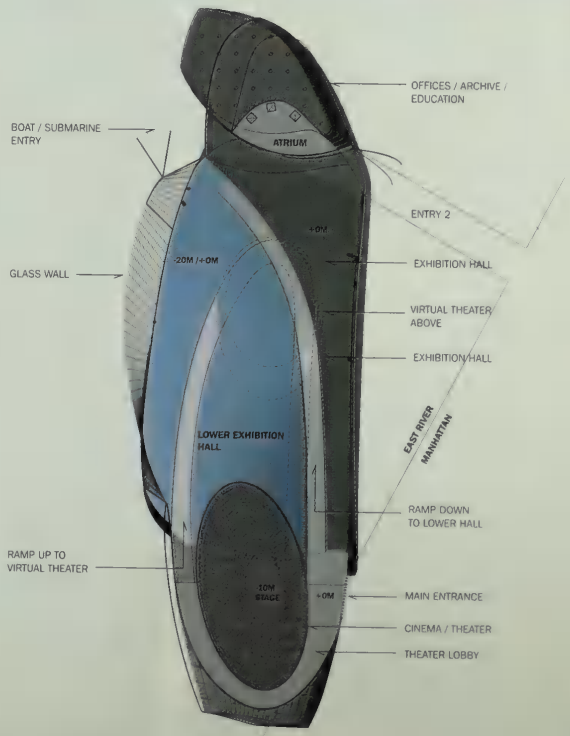
SECTION A-A





LEVEL +20M (66 FT.)

0 200 FT. 60 M. N



LEVEL 0

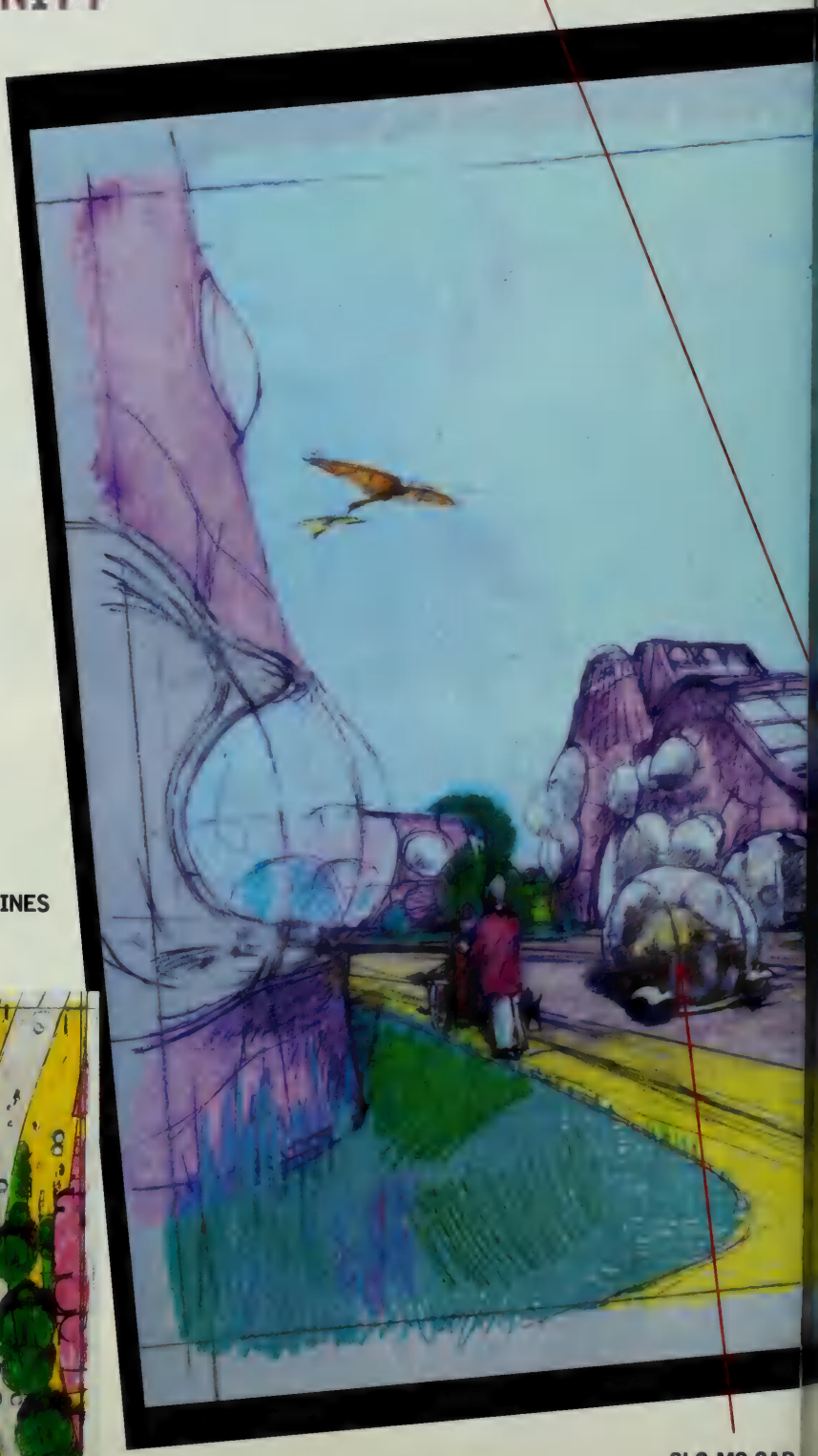
0 200 FT. 60 M.

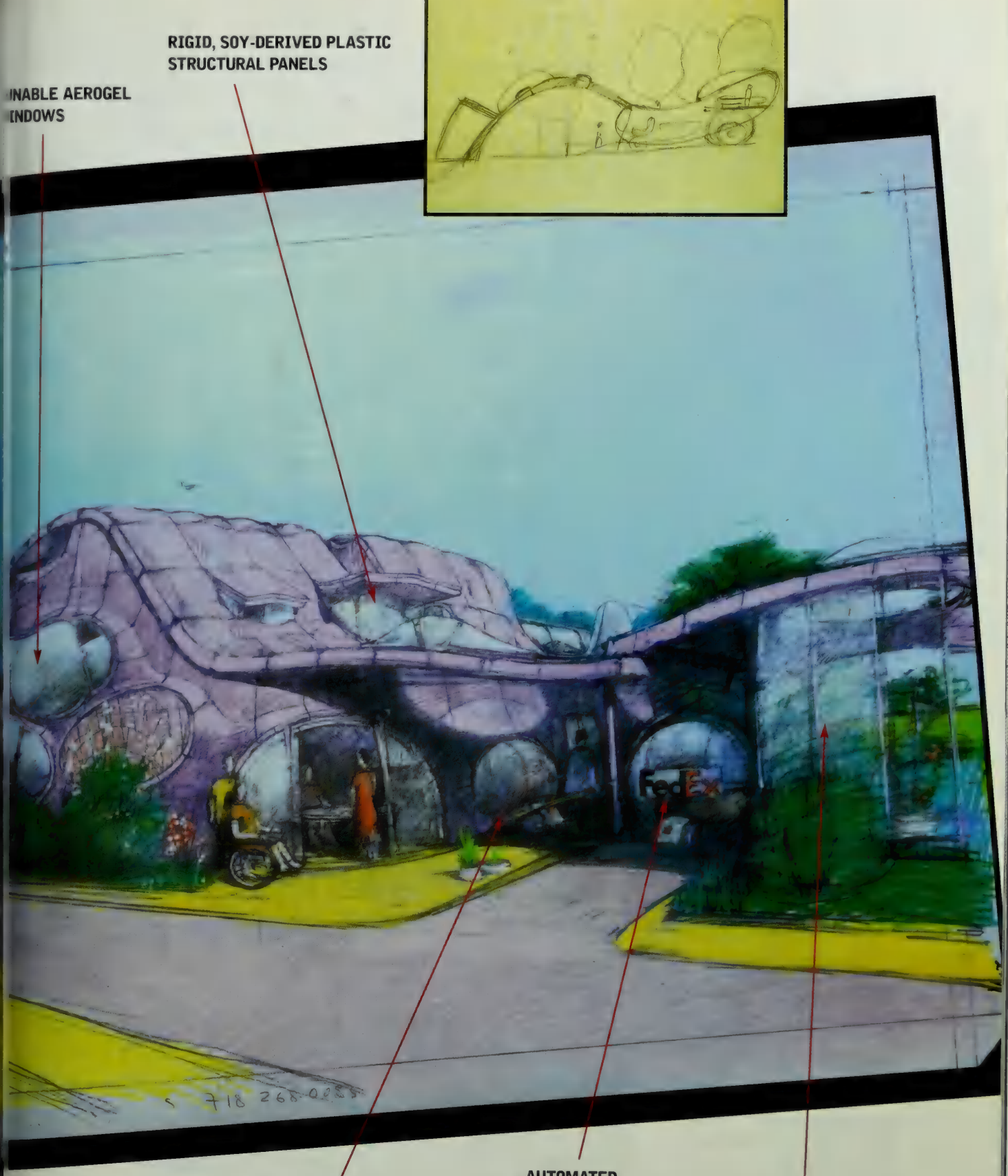
The vast interiors with meandering ramps are framed by computer-modeled and fabricated lightweight steel structures. The exhibition hall's floor can slide back to create an aquatic arena (this page and opposite).

MICHAEL SORKIN wheels out plans for a sustainable RETIREMENT COMMUNITY

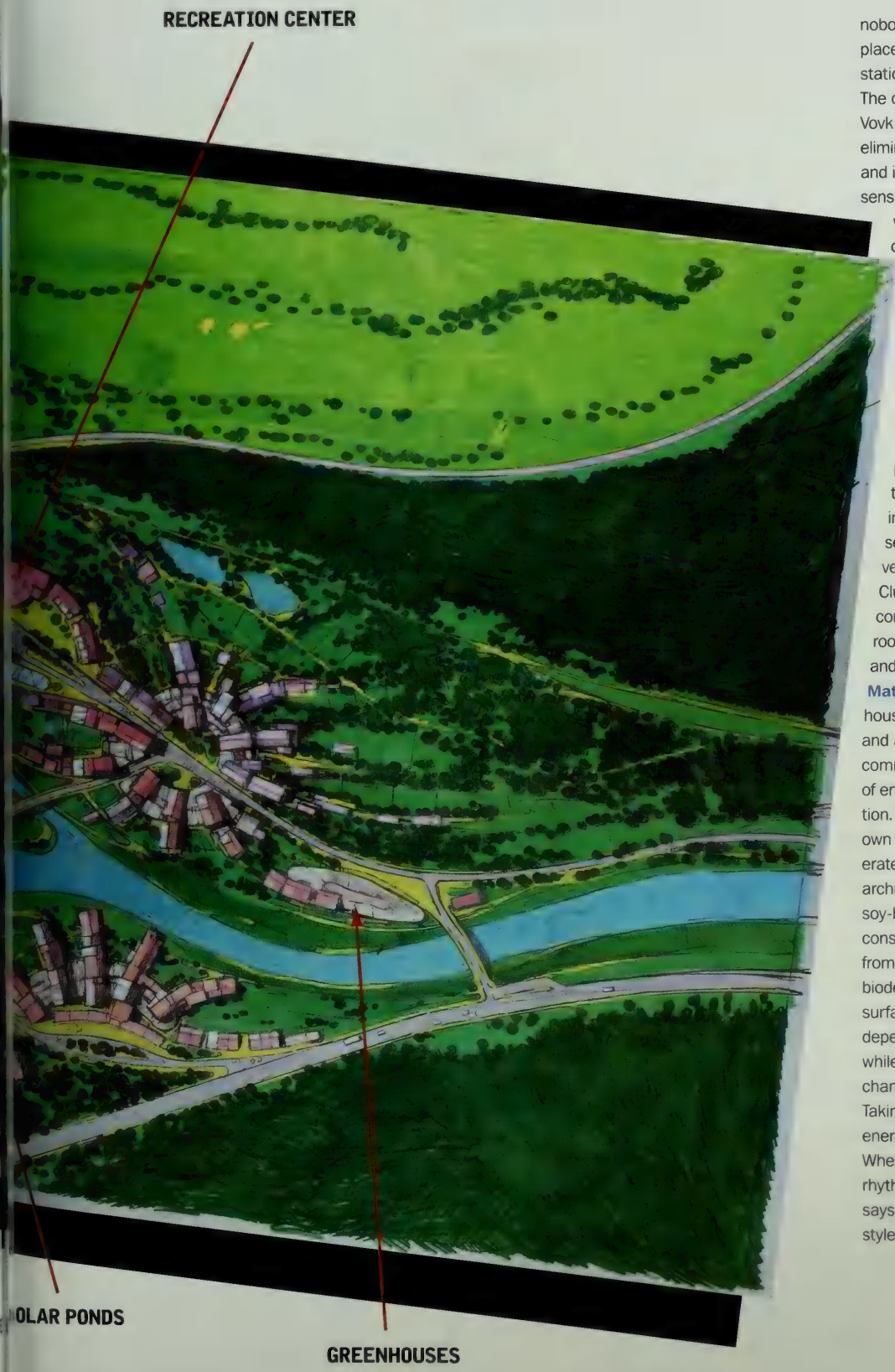
Project: Wheelchair Village
Location: Somewhere in the Midwest
Architect: Michael Sorkin Studio—Michael Sorkin, Andrei Vovk, partners
Program: Retirement community with recreation and social facilities, using ecologically sustainable building and waste technologies
Size: 1,500 residents
Completion Year: 2030
Design Intent: Like many baby boomers, the architects say they don't expect to fully retire and they wouldn't want to live in a place filled with old people or people of any one type. There are some aspects of a retirement community they find attractive, however, such as the expansive space it devotes to sports and leisure activities, its dedication to pleasure, and its predominant mode of transportation, namely, slow, safe, nonpolluting golf carts.

What the architects don't like about present-day retirement communities is the homogeneity, the tendency to sprawl over the landscape, and that




RIGID, SOY-DERIVED PLASTIC STRUCTURAL PANELS
NABLE AEROGEL INDOWS
FedEx
INTEGRATED SLO-MO CAR DOCKING
AUTOMATED DELIVERY CAR
LIVING MACHINE

INTERMODE PIER: TRANSFER FROM BOATS TO SLO-MO BOATS
HYDROELECTRIC DAM
SLO-MO CAR ROUTES
GOLF CLUB
INTERMODE GARAGE: TRANSFER FROM CARS TO SLO-MO CARS
TENNIS COURTS
COHOUSING CLUSTERS
COMMUNITY CENTR

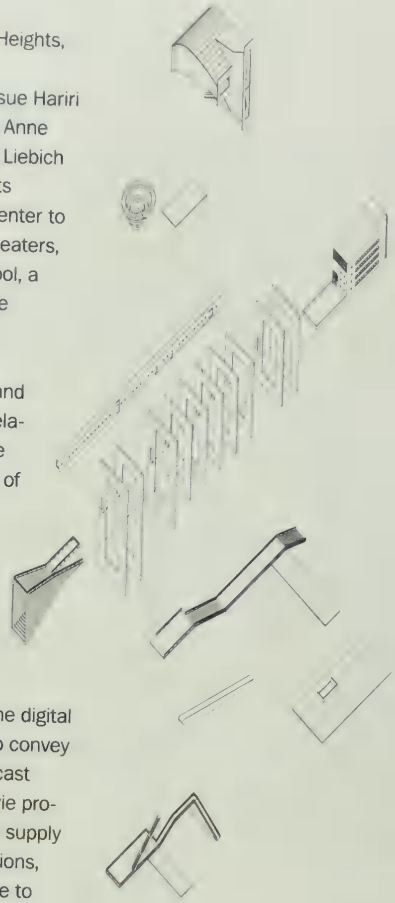


nobody works. "So many of these places are simply clean ghettoes, way-stations to the hereafter," states Sorkin. The community designed by Sorkin and Vovk would take the best of Sun City, eliminate its dull and uniform aspects, and inject a healthy dose of ecologically sensitive urbanism. Located on a small waterway, the development would combine living and working environments and offer a pedestrian-oriented setting. To reduce pollution and save energy, residents would park their cars at communal garages, then take small, bubbled wheelchairs powered by foot, solar energy, or hydrogen fuel. The chairs would plug into the houses and move through all buildings, while also linking up to both a public transit system servicing villages in the area and to a very high-speed interstate system. Clusters of cohousing units would combine private spaces and shared rooms (such as communal kitchens and living rooms).

Materials and Technologies: Greenhouses, ponds to collect solar power, and a hydroelectric dam would allow the community to be self-sufficient in terms of energy and even some food production. The village would also handle its own wastes, recycling them to help generate energy and fertilizer. The architects are exploring new kinds of soy-based feltlike building materials for constructing houses, which would come from renewable sources and be biodegradable. Photovoltaic cells on roof surfaces could reduce the residents' dependence on other sources of energy, while "tunable" aerogel windows could change from transparent to opaque. Taking direct responsibility for its own energy, waste, and even food source, Wheelchair Village would "reestablish rhythms that are lost to plural culture," says Sorkin, and create a "democratic style of environmental accountability."

HARIRI & HARIRI conjures up THE CINE, an experimental film center for the year 2020

Project: The Cine
Location: Pier #2, Brooklyn Heights, Brooklyn, New York
Architect: Hariri & Hariri—Gisue Hariri and Mojgan Hariri, principals; Anne Uhlman, Marc Stierlin, Nadya Liebich
Consultant: Texas Instruments
Program: Experimental film center to include indoor and outdoor theaters, film sets, a gallery, a film school, a video arcade, and a cyber cafe
Size: 50,000 square feet
Completion Year: 2020
Design Intent: Through form and structure, The Cine explores relationships between architecture and film—and the very nature of 21st-century entertainment.

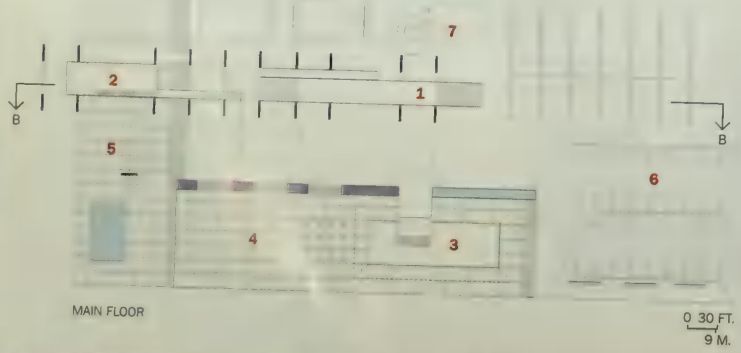


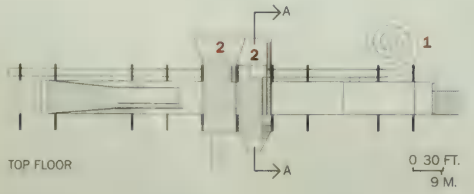
Sited on a pier near New York City's Brooklyn Bridge, this experimental film center features digital-micromirror-device (DMD) screens that are visible from both the street and the river. The digital displays can be programmed to convey information, receive and broadcast films via satellite, or act as movie projection screens. With a back-up supply of virtual actors, sets, and locations, this DMD technology will be able to generate a new movie at any time.

In the complex's pier structure, a series of concrete frames support the programmatic elements. At the entry to the film school and the entire complex, a digital screen offers movie previews.

The school component is a rectangular box housing classrooms,

1. *Outdoor lobby/ shooting gallery*
2. *Observation deck*
3. *Cyber cafe/video arcade*
4. *Outdoor cafe*
5. *Promenade*
6. *Parking*
7. *Ramp*





TOP FLOOR

1. *Ramp*
2. *Indoor cinema*
3. *Covered outdoor cinema*
4. *Film school*
5. *Vertical-screen cinemas*

SECTION A-A

screening, editing, and sound studios.

The Film Track Gallery, a long DMD-clad tube, is linked to the street by a spiral concrete ramp. Film strips exhibited on the DMD walls are visible from the interior, as well as the exterior, where a plaza provides benches.

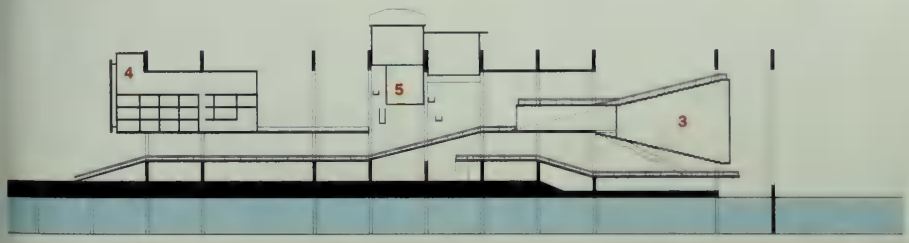
At the complex's center, three theaters with large-scale vertical and horizontal digital displays challenge the conventional screen format and dimensions—suggesting possibilities for future films.

At the pier's end, an indoor/outdoor theater for film festivals features a freestanding DMD screen that faces Manhattan, across the river. Reminiscent of the popular drive-in cinemas of the 1950s, this screen addresses those reaching the theater by boat or sailing past it. "We want to invert the idea of a cinema as a closed space, isolated from the city," says architect Gisue Hariri, "by opening it and merging it with the urban setting."

Ramps, bridges, and covered film-shooting galleries, threading through the buildings, offer film locations, as well as public spaces for meditation or movie and people watching. A glass-enclosed video arcade and cyber cafe—places for social gathering—bring together the next generation of filmmakers.

With new digital technology changing the process of photography and infiltrating the entertainment and communications fields, "one can only imagine," says Gisue Hariri, "how the film industry—and the architecture created to accommodate it—will change in the near future."

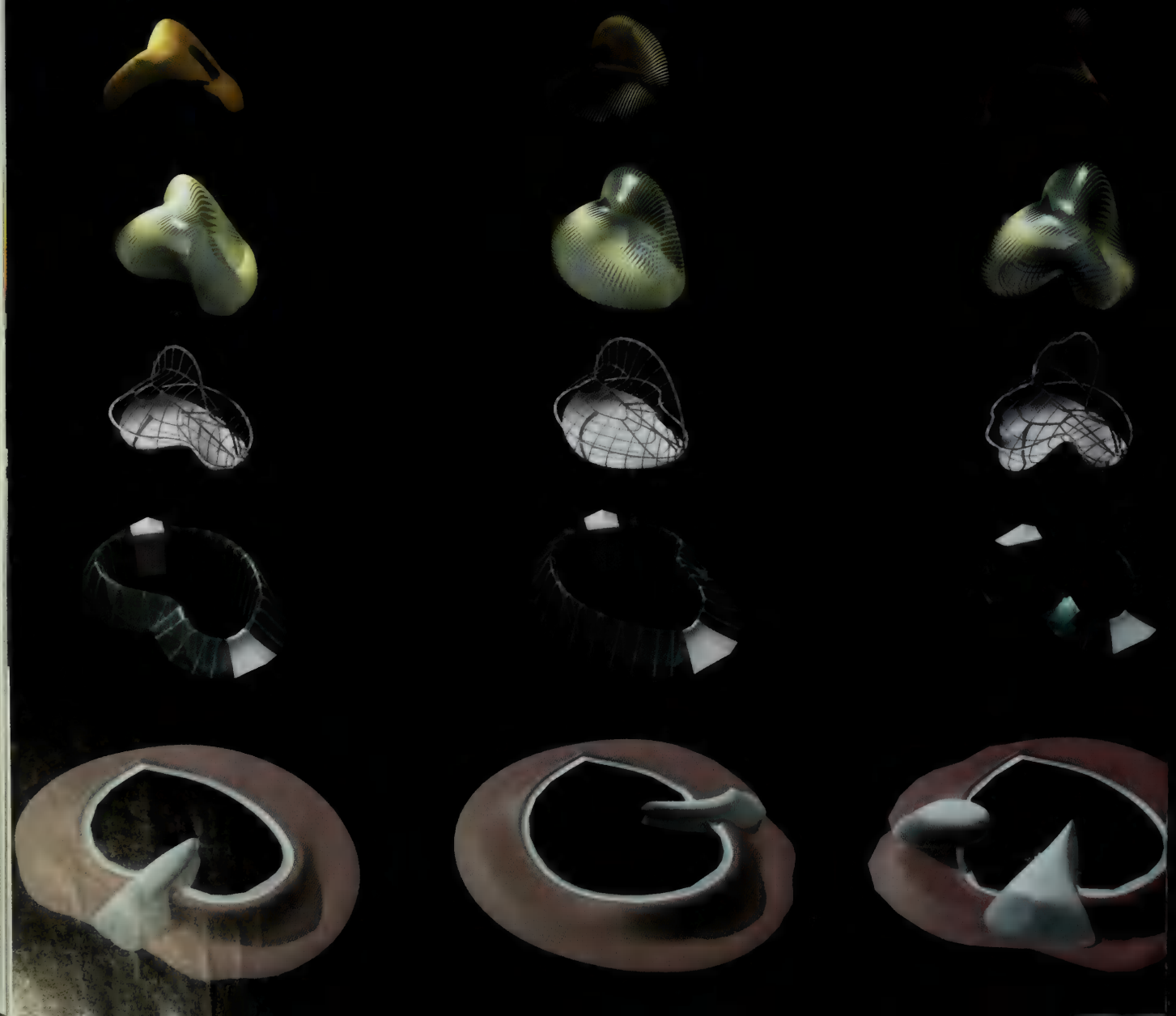
Materials and technologies: Structural concrete frames, steel, glass, DMD (digital micromirror device) screens



SECTION B-B

0 30 FT.
9 M.

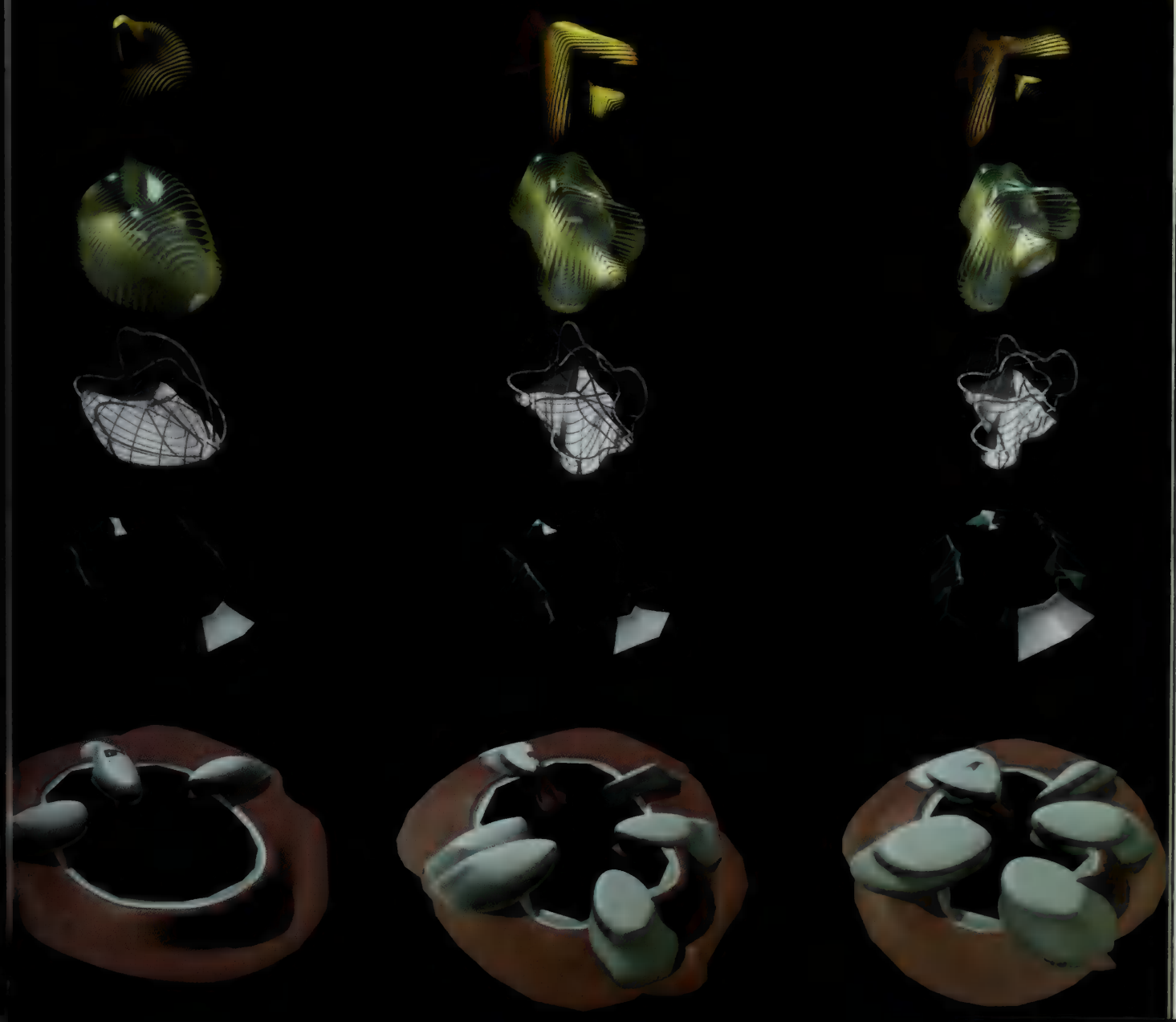
GREG LYNN develops a system for generating biomorphic MANUFACTURED HOUSES



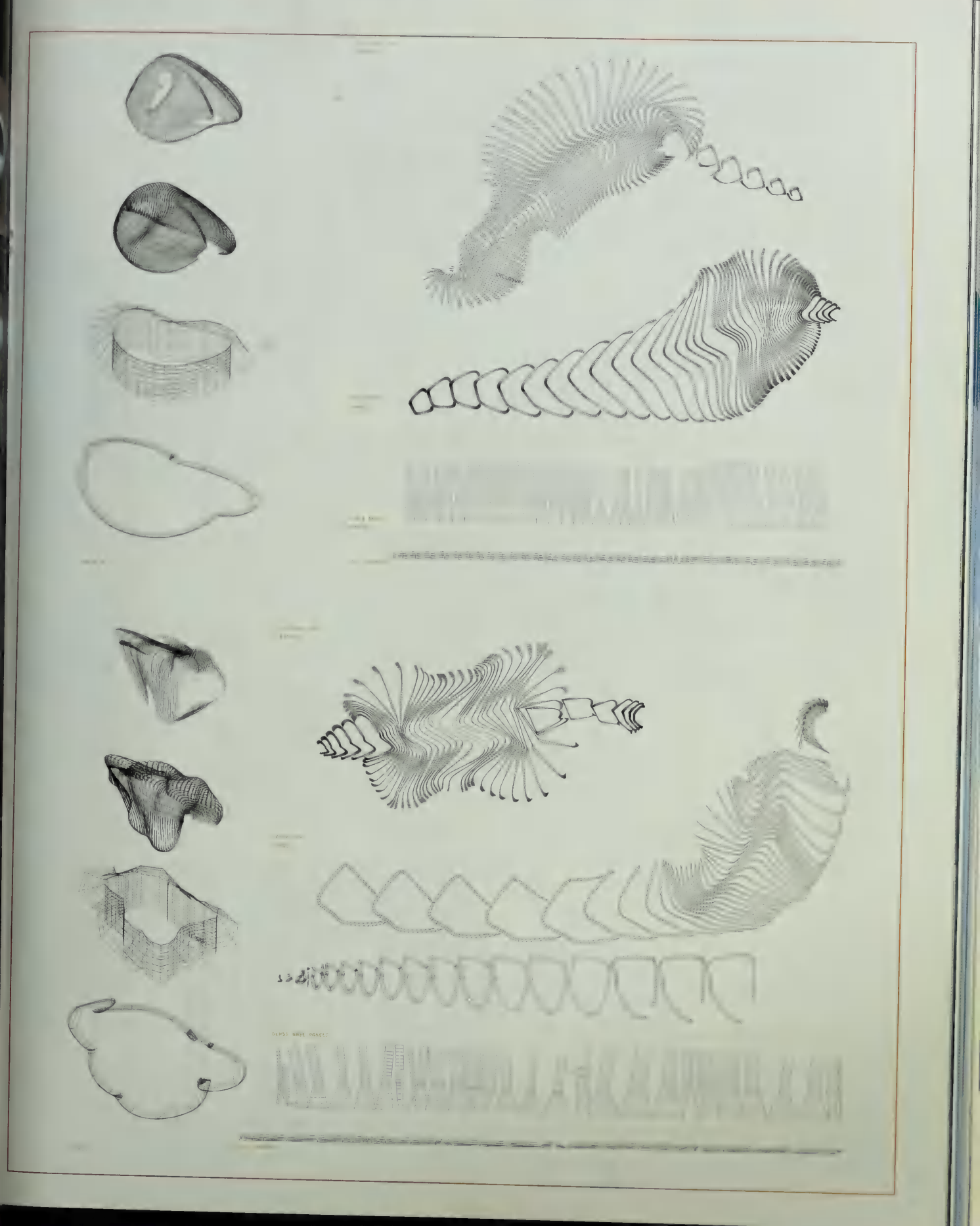
Project: Embryologic House
Location: Variable
Architect: Greg Lynn FORM—Greg Lynn, principal; Nicole Robinson, project designer; [illegible] Chou, David Erdman, Andreas [illegible], Jefferson Ellinger, project team
Garden designer: [illegible] Kipnis
Sponsors: International [illegible] Forum, Ulm; Wexner [illegible] for the Arts
Program: Manufactured house
Size: [illegible] square feet

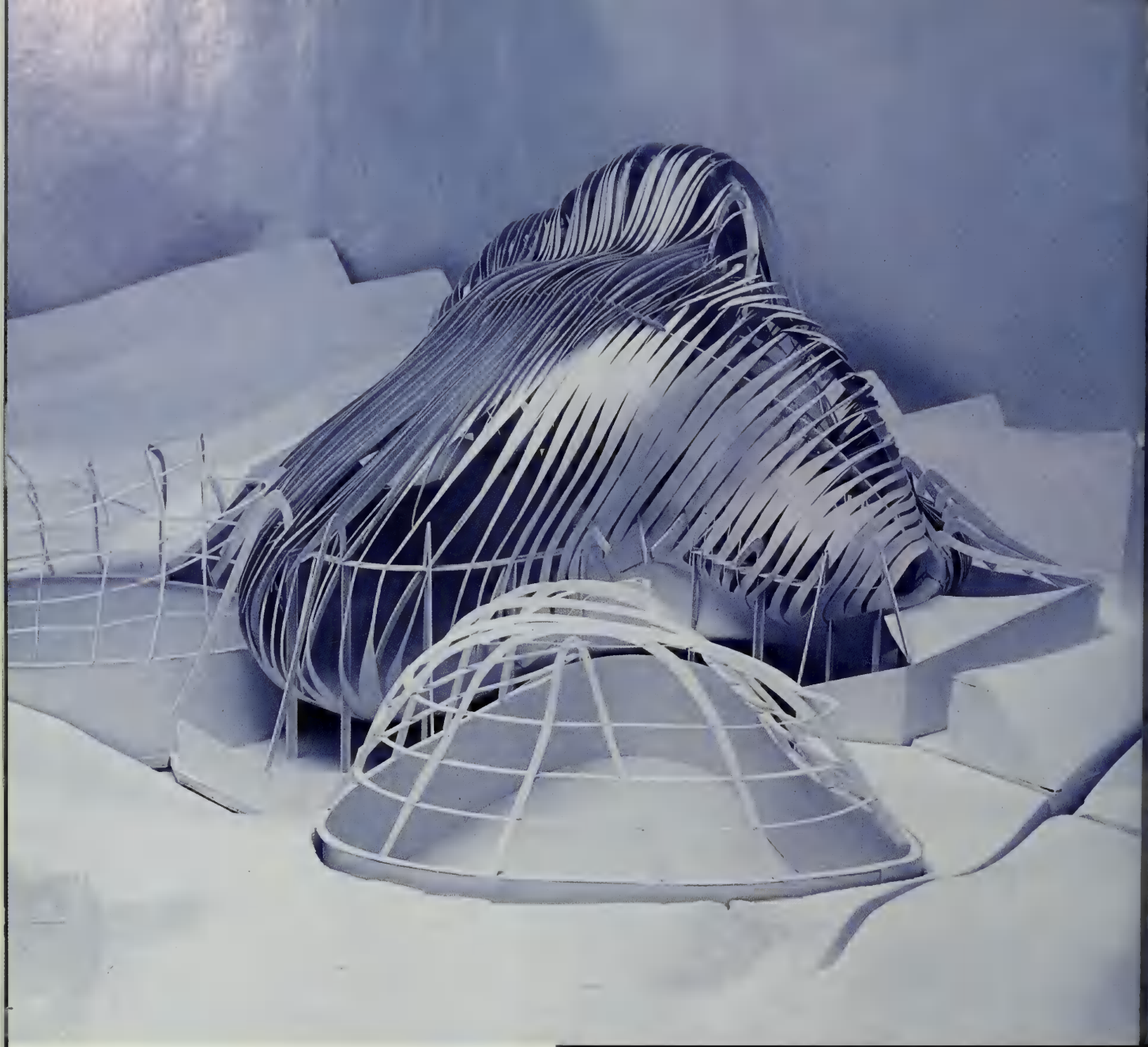
Completion Year: 2002
Design Intent: The architect's goal was to design a line of houses, much as Nike might create a new line of athletic shoes or Ford a new model Mustang. Merging architecture with industrial design, the project required inventing a manufacturing process, as well as an individual building.

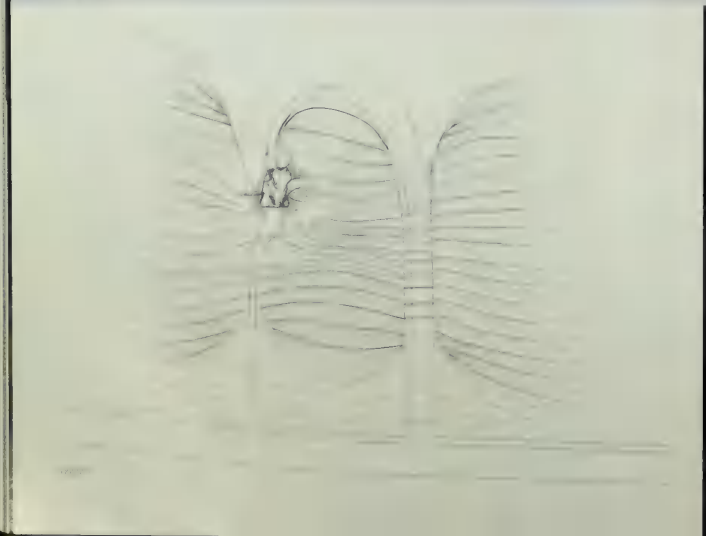
"The trend in many industries today is to use 'flexible manufacturing,' in which computerized machines can make a range of components," explains Greg Lynn. Employing such a system, Lynn and his staff planned a house made of a fixed number of double-curved aluminum panels resting on a frame of rolled-aluminum tubes and long span tubular steel beams. While the number of exterior panels stays the same, as the house's configuration varies (three bedrooms or four, large kitchen or small), the size and shape of the panels change. Instead of the old



A flexible manufacturing system can generate an endless variations on the prototype house. Computer-rendered images (above) show how room and garage appendages can affect the form of the house and the surrounding landscape. Drawings (opposite) illustrate how the basic layers of building elements that compose each house—including the metal armature, aluminum sandwich panels, and photovoltaic panels—can differ.



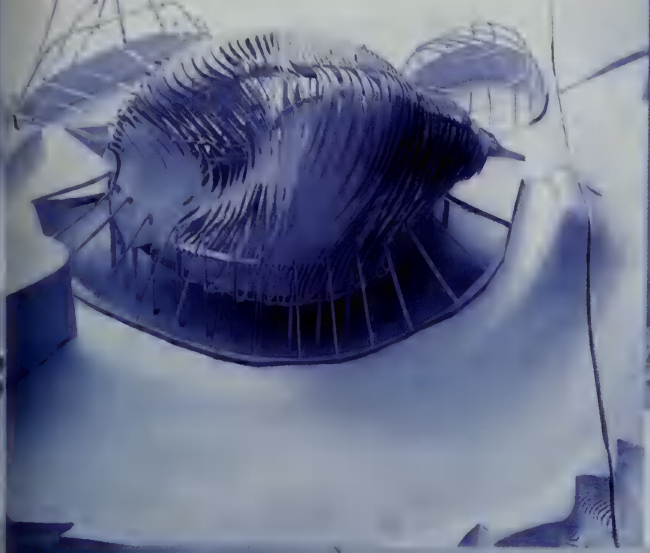


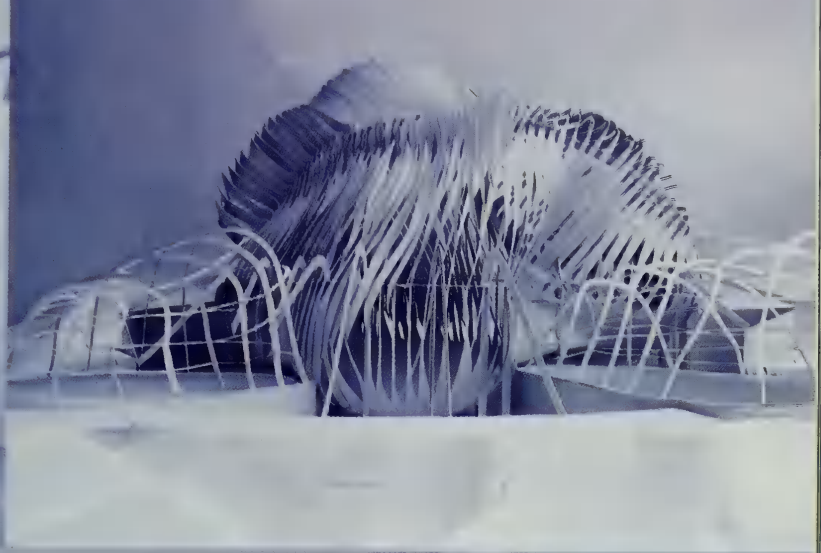


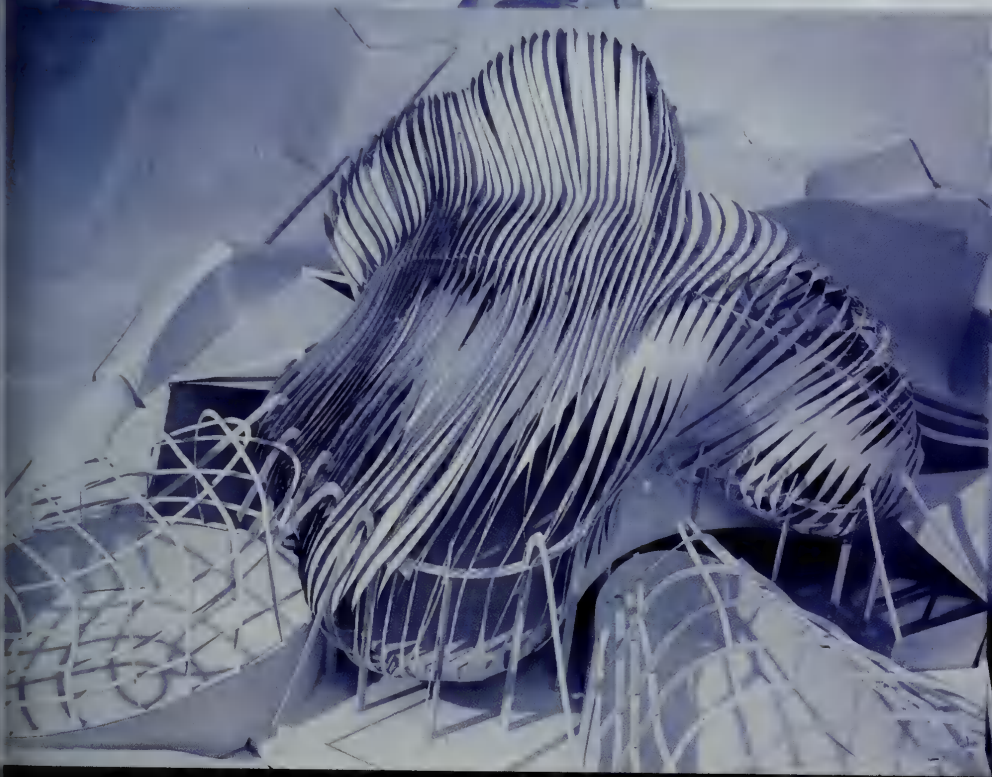
kit-of-parts approach to building, in which standardized elements are added or subtracted, the Embryologic House employs a strategy almost biological in concept, i.e., the pieces themselves vary with each iteration. Because the relationship among individual parts doesn't change, the houses have a familial similarity or a brand identity. The idea, says Lynn, is that "if you design a seed, you can grow endless variations from it. But all of the information needed for any variation is encoded in the original."

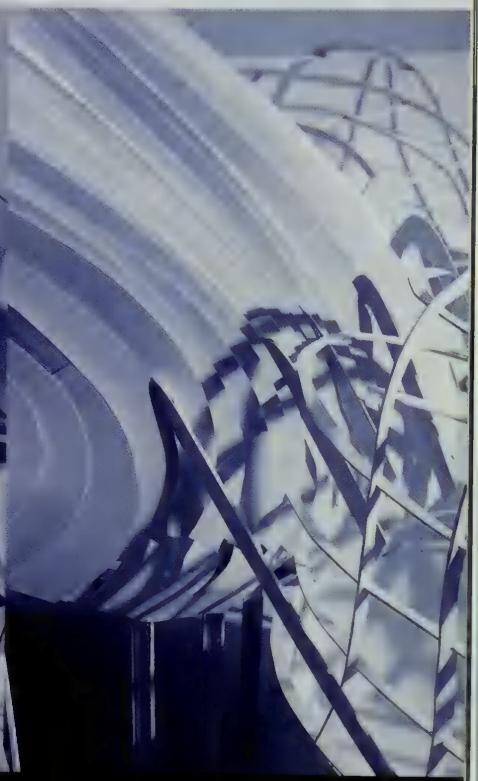
Earth berms wrap around par the house, and the main entry is c the upper of two floors. Rather tha be defined by a fixed set of rigid points, the volume of the house is contained within a soft, flexible curved surface.

Openings for doors and windo come between panels like tears or shreds in the house's surface, not sharp cuts. From some angles the house appears buried in the earth; from others, it seems to float abov the ground. Form and color also w









together, with metallic iridescent colors "picking up the voluptuous curves" of the house, says Lynn.

Inside, each of the two floors has its own character. The smaller, upper floor is fitted out with custom furniture designed to complement the "blobular" structure. The larger, lower level has a more traditional feel, with partitions dividing the space into rooms.

Materials and Technologies: The house is an aluminum monocoque structure with more than 2,000 insulated and prewired curved aluminum sandwich panels. Flexible photovoltaic panels mounted on a light-steel structure help shade the house and generate energy. The sandwich panels and concrete-slab floor provide radiant heat, making all surfaces environmentally controlled. Some of the fenestration includes an active-glass system that can change from transparent to opaque, depending on sunlight conditions and residents' wishes. For the interiors, the architects specified recyclable materials, such as aluminum, wood, and plastics.

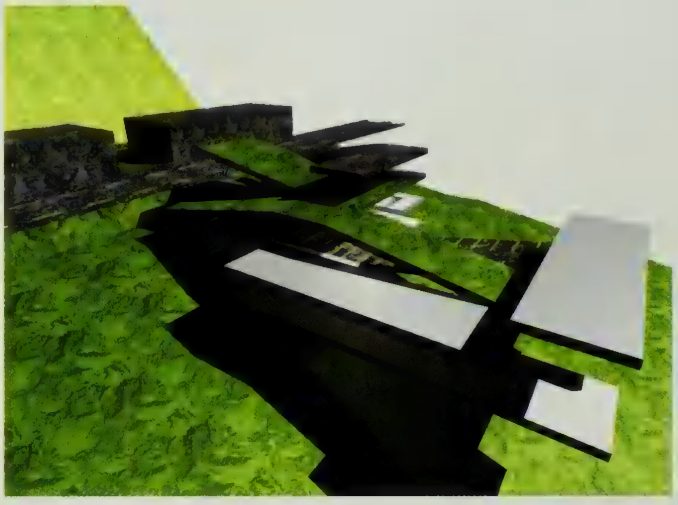
The house can be built on any site with a 100-foot-diameter clearing and less than a 30-degree slope (site plan, opposite). Earth mounds and undulating berms protect the house and define gardens.

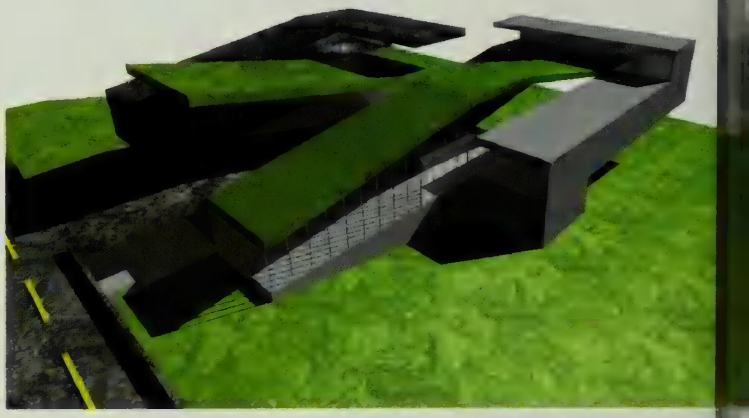
GUTHRIE + BURESH sketches out an ARTS SCHOOL where space and program interlock

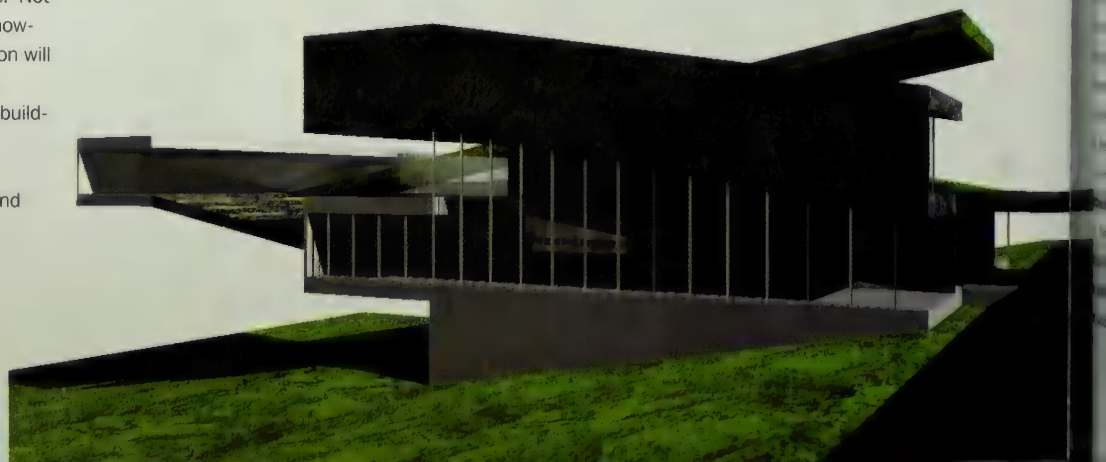
Project: College of Modern Art, Los Angeles
Location: Sunset Strip overlooking the L.A. basin
Architect: Guthrie + Buresh Architects, West Hollywood, Calif.; Danelle Guthrie and Tom Buresh, principals; Kai Riedesser, Mark Skiles, design team
Program: A university-level arts-education complex.
Size: 80,000 square feet on 1.25 acres
Completion Year: 2020
Design Intent: After the architects investigated several fine arts schools, they developed a spatial diagram that would reflect a multilevel educational approach. "We are trying to spatialize the curriculum," says Danelle Guthrie.

The primary space would be a series of wide ramps conceived along the lines of a figure-eight knot. The ramps would accommodate all kinds of activities in the form of a streetscape, landscape, and schoolscape. Both the streetscape and landscape would come right into the ramped structure, integrating the school with the outdoors.

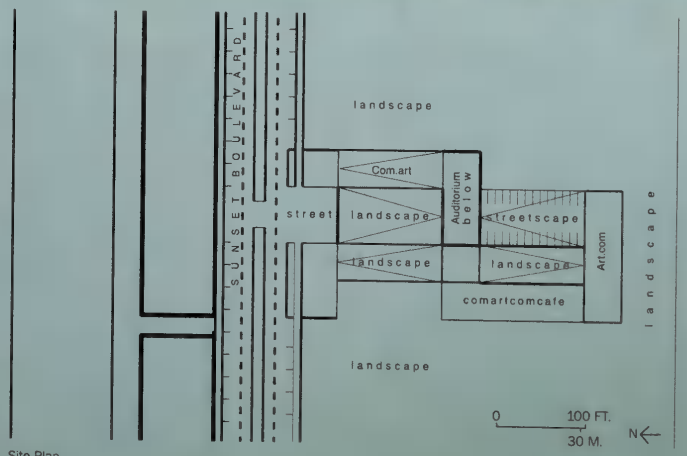
The main entrance to the building, on Sunset Boulevard across the street from Chateau Marmont, would receive both pedestrians and cars. "You could drive into it, put the cars on the inclined ramp, and get out and go to class," explains Tom Buresh. "We are accepting the car as part of architecture." Not all students would arrive by car, however, because public transportation will be a significant means of getting around in the future. Once in the building, students would walk to the relatively flat ramps forming the schoolscape, where they would find their art studios or classes.



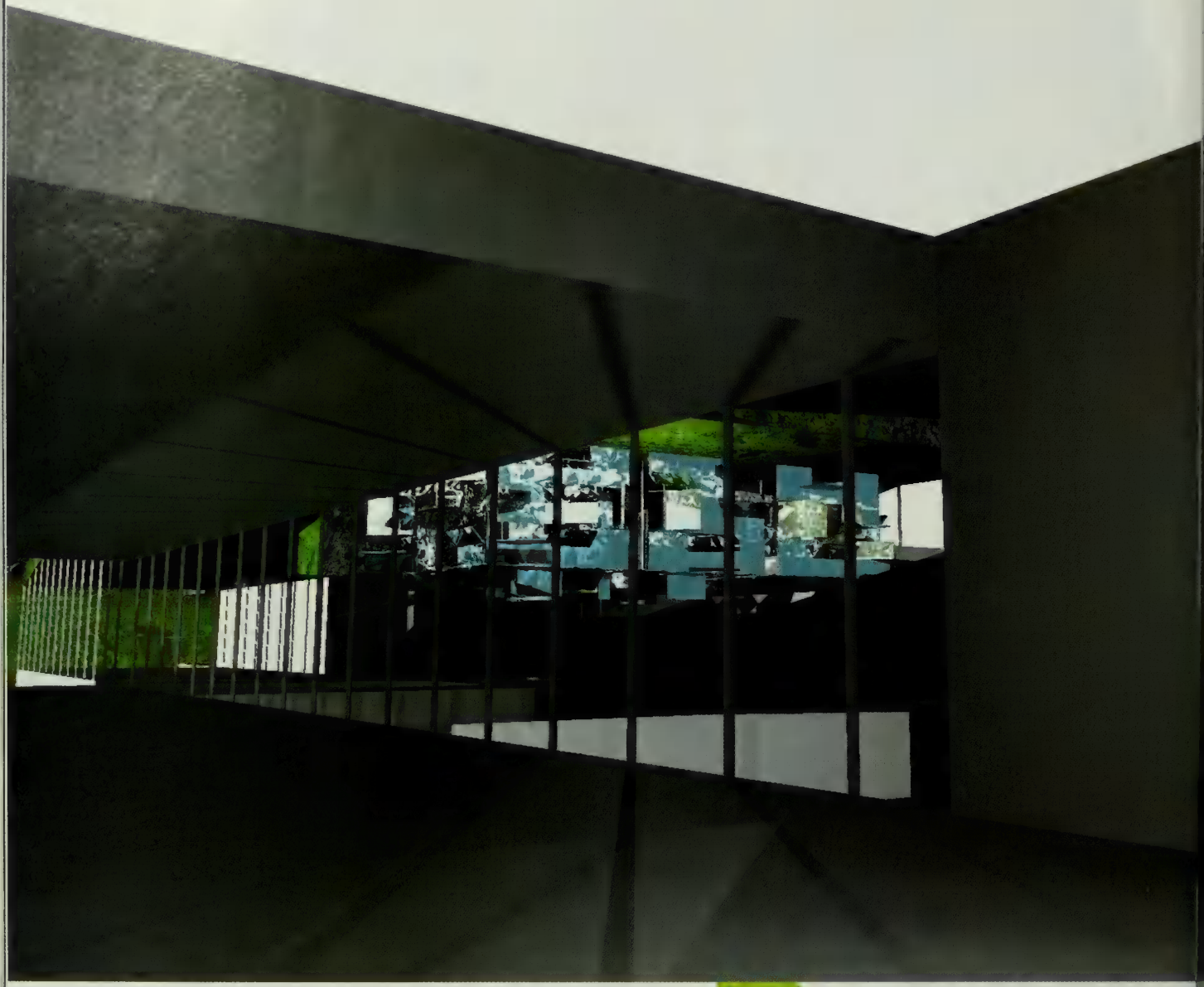


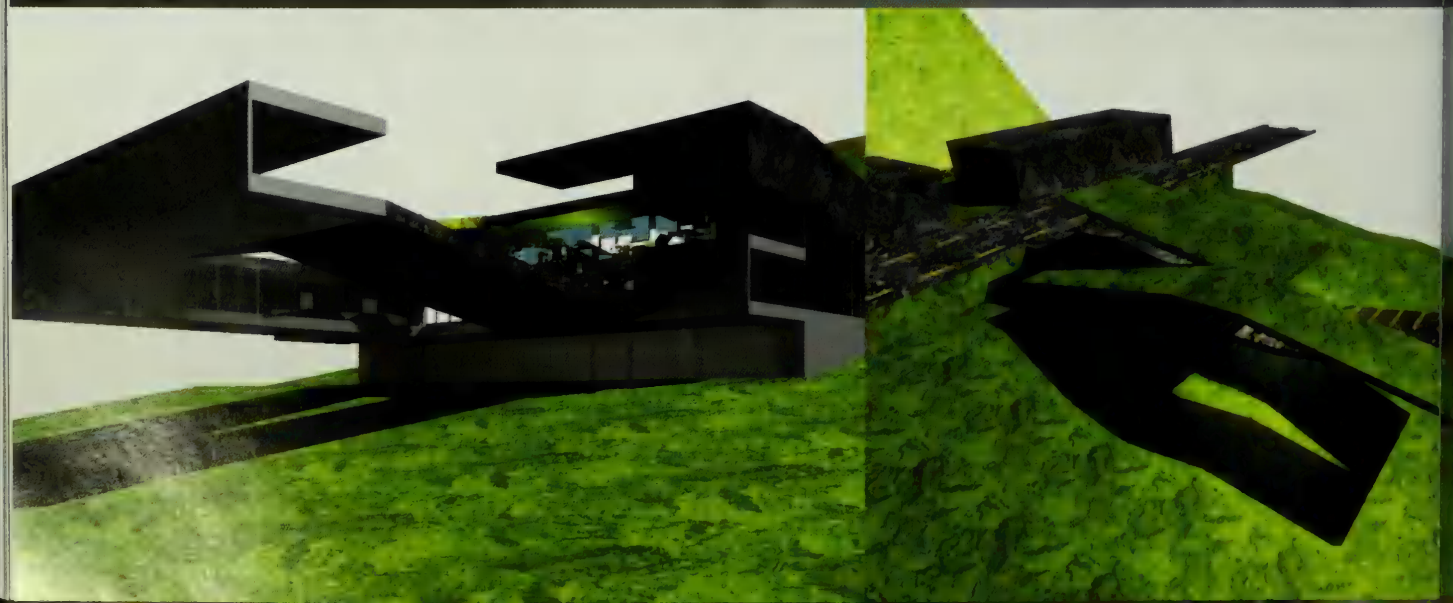


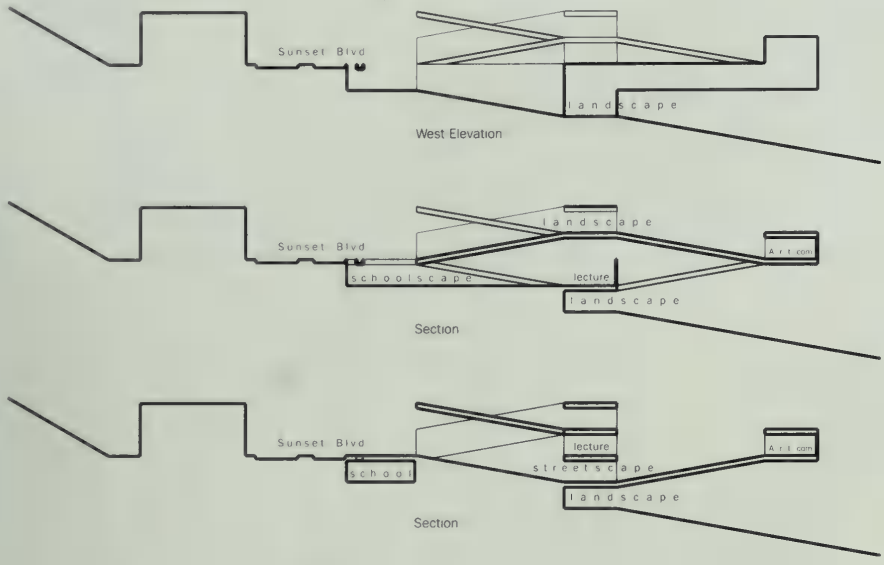
Views of the art school show how the various levels sit in the hillside along Sunset Boulevard: the southwest corner (opposite top), the northwest corner (middle), and the northeast corner (bottom). Entering the school (above) students see both classrooms and sloping landscape.

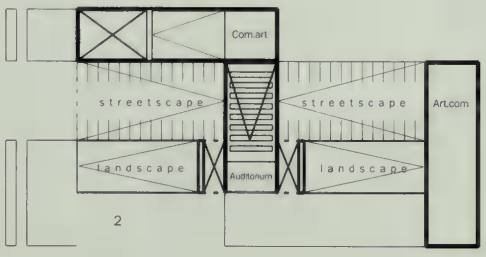


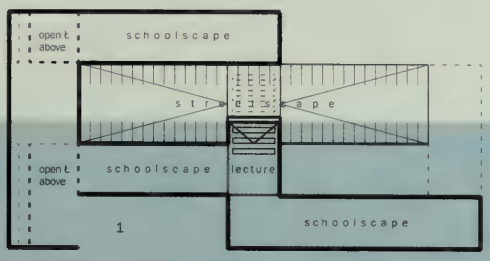
Site Plan











The ramplike school spaces are entered from Sunset Boulevard to the north. Looking into the school from the southwest corner (opposite), the auditorium is visible. The roof (right) is landscaped and accessible for student use.

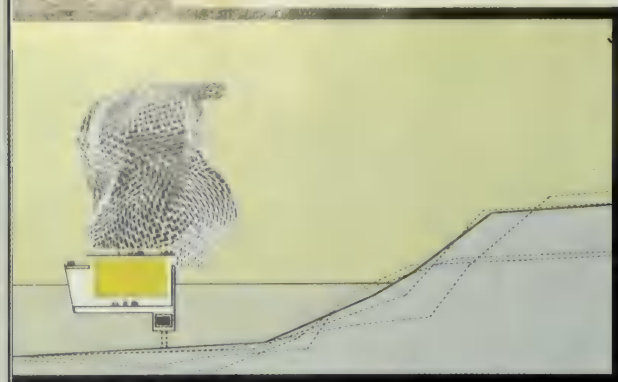
The large auditorium would hover above the inclined streetscape ramp. At the far end of the ramp, an art gallery ("art.com") would cantilever over the back slope. In addition to the gallery would be a shop ("com.art") where students' work could be sold.

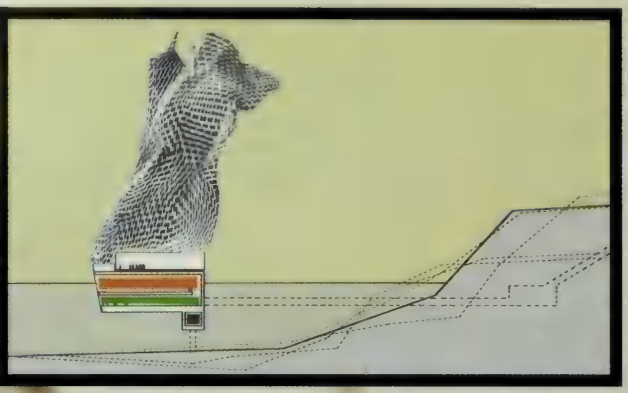
Secondary spaces composed of podlike structures would accommodate seminar meetings and darkroom activities. "This is the tight-fit architecture where spaces are tied so closely to the program," says Buresh.

Interwoven among the street and the school would be landscape ramps, or "manufactured nature," adds Buresh, "in keeping with the L.A. environment." The landscape part would connect to the hill behind the school and form the roof surface, where a cafe would be installed.

"We are trying to animate the ground and sublimate the figure (the building) instead of having the two polarized," Buresh says. "It is not figure/ground, but figur*ed* ground."

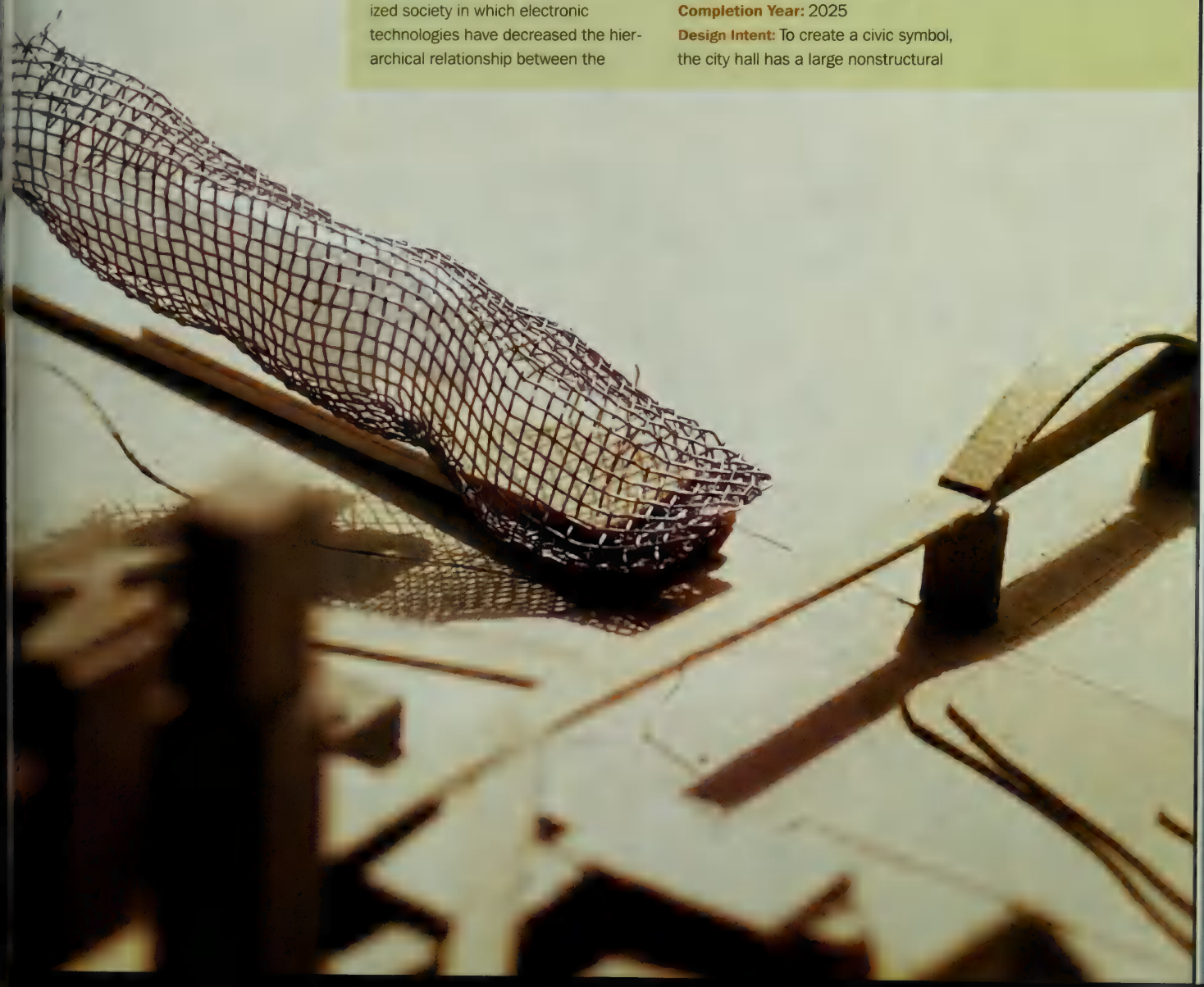
Materials and Technologies: The structural frame and enclosing surfaces would be constructed of a high-density lightweight polymer.





MOCKBEE/COKER designs an ecologically monumental CITY HALL for the future

Name: New city hall
Location: In the Mississippi River, anchored by an elevator shaft connected by a tunnel to downtown Memphis
Architect: Mockbee/Coker Architects; Coleman Coker, principal; Jonathan Tate, Vincent Bandy, Carl Kennon Jr., Kenton Keeter, design team; Henry Yamamoto, Trey Harrison, computer graphics
Program: The design for a city hall responds to the fragmented, decentralized society in which electronic technologies have decreased the hierarchical relationship between the government and the individual, and increased the potential for involvement in local matters directly from the home or office computer. The time-consuming annoyances of bureaucratic life, such as registering for auto tags, filing property deeds and legal documents, and getting licenses, will reside in the past. The city hall can instead reassume its function as a monumental symbol of the polis, instilling civic pride and encouraging a sense of community.
Size: 390,000 square feet, five levels
Completion Year: 2025
Design Intent: To create a civic symbol, the city hall has a large nonstructural



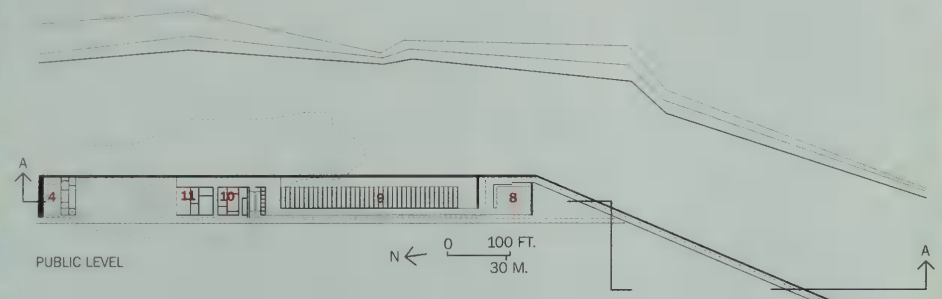
fabric "dome," rather like a sail, that is kept aloft by gases held in the double-walled fabric. This surrogate dome, which expresses the uncertain era heralded by quantum mechanics, as opposed to the earlier age of observable Newtonian laws, will be in a constant state of flux, moving with the wind and the changing climate.

To enhance the community spirit, a public place for festivals, concerts, or simply watching the sunset is made a central component of the design. In addition, a broadcast facility for discussing city matters would be included, along with an interactive archive that documents the city's history. This archive could be visited from home via computer, as well as at City Hall.

Materials and Technologies: The lower structure is made of solid glass with a light- and temperature-sensitive metal skin. The fabric will be made of acrylic-coated nylon. A photovoltaic layer on the fabric would produce some of the electricity needed to keep the fabric structure aloft, and a local helium vendor would supply the necessary gases.

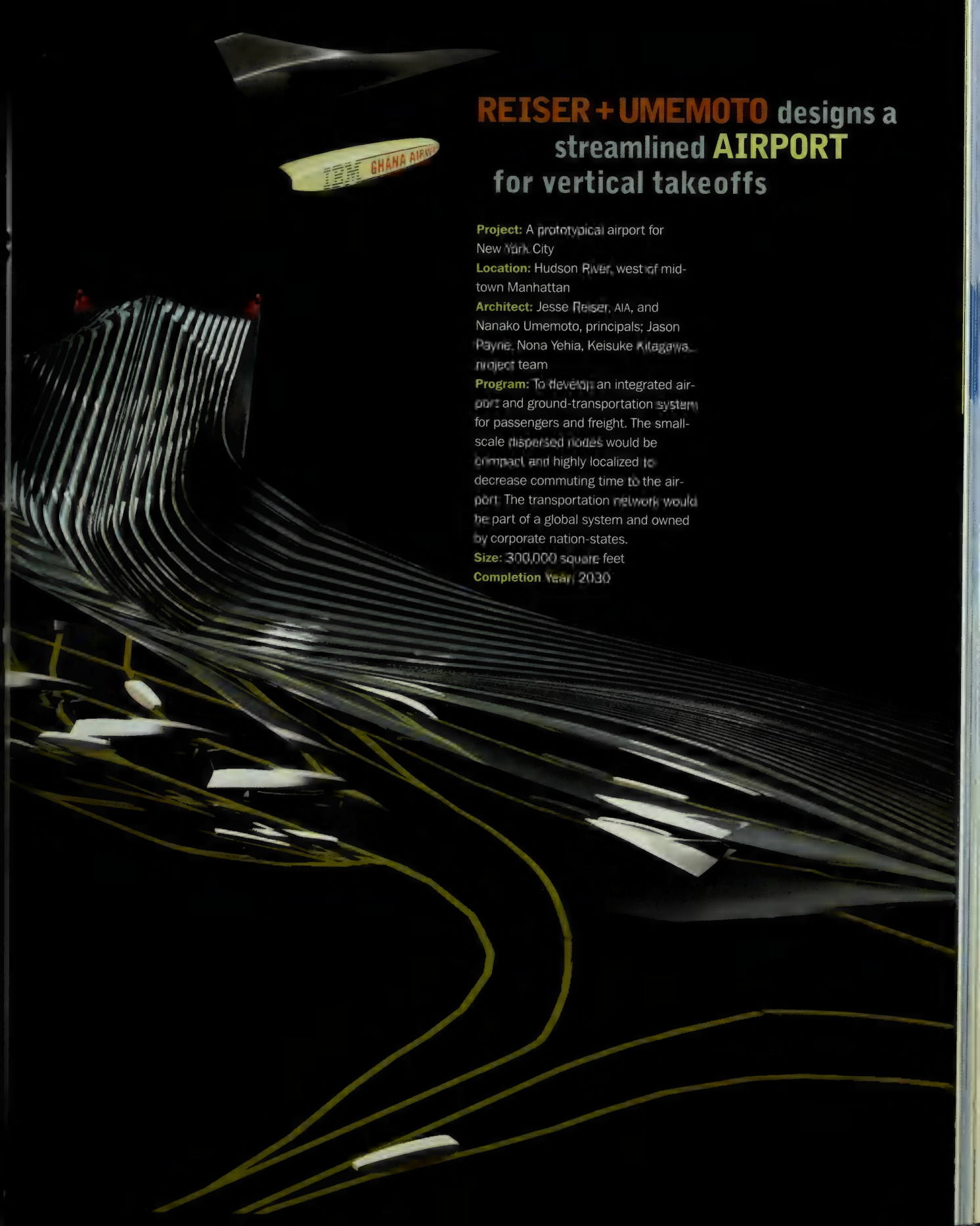
The mechanical systems would convert the temperature differences between the river water and the air into energy through an advanced heat-pump system, which in turn will help air-condition the structure. Miniturbines attached to the side of the structure below the water line will take advantage of the strong river current to generate additional electrical energy for the city hall.

SECTION A-A



PUBLIC LEVEL

1. *Entry*
2. *Turbines*
3. *Thermal exchange (water source)*
4. *Mechanical*
5. *Council meeting place*
6. *Broadcast facility*
7. *Archive–retrieval*
8. *Archive–for viewing*
9. *Archive–interactive*
10. *Council chambers*
11. *Mayor*
12. *Public place and promenade*



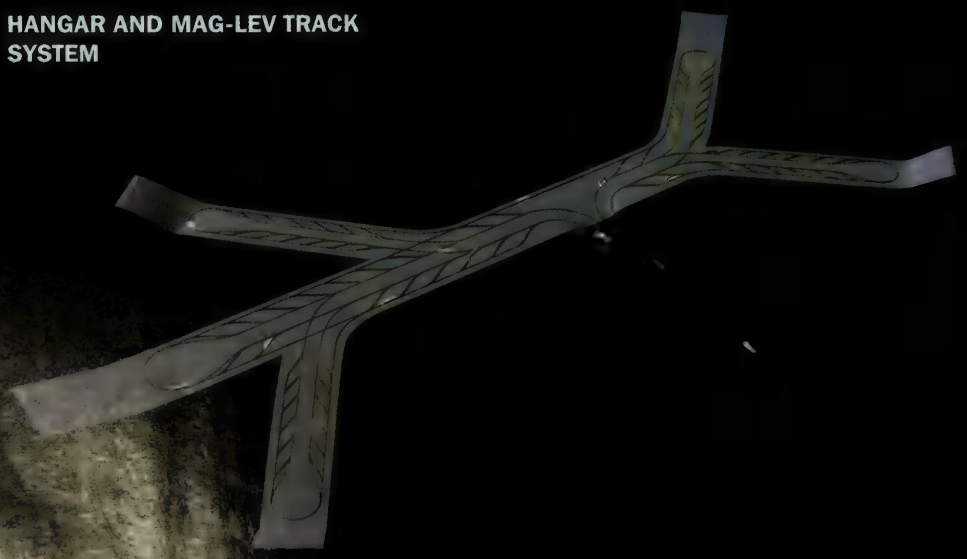
REISER + UMEMOTO designs a streamlined AIRPORT for vertical takeoffs

Project: A prototypical airport for New York City
Location: Hudson River, west of midtown Manhattan
Architect: Jesse Reiser, AIA, and Nanako Umemoto, principals; Jason Payne, Nona Yehia, Keisuke Kitagawa, project team
Program: To develop an integrated airport and ground-transportation system for passengers and freight. The small-scale dispersed nodes would be compact and highly localized to decrease commuting time to the airport. The transportation network would be part of a global system and owned by corporate nation-states.
Size: 300,000 square feet
Completion Year: 2030

SPACEFRAME ROOF

FLIGHT DECK

HANGAR AND MAG-LEV TRACK SYSTEM



Design Intent: This intermodal transportation system calls for magnetic-levitation (mag-lev) high-speed surface transit to be hooked into small vertical-takeoff airports. The use of hypersonic vertical-takeoff aircraft would eliminate the need for long runways and provide flexibility in scale, capacity, and configuration of the airports.

The prototypical airports vary in capacity for large and small planes and basically consist of a multipurpose platform or flight deck, much like that of an aircraft carrier, with a landing pad at one end, a takeoff pad at the other, and a taxi area in between.

Beneath this platform are tracks that receive removable aircraft fuselages. These intermodal pods drop from the planes' underbellies at the terminal and then connect via mag-lev paths to central train stations. A spaceframe roof covers the entire airport structure, which could be developed as an artificial parkscape.

A passenger flying from New York to Paris, for example, could board the pod or compartment at a mag-lev transit station. The pod arrives at the airport, where it is hoisted off the tracks, and taken into the underbelly of the spacecraft.

While the spaceplanes are generically designed for overall efficiency, the pod would be outfitted according to the corporate/national sponsor's wishes. The passenger would stay in the pod for the duration of the trip, about a half-hour to Paris, hardly time to consume the once-reviled airplane snack.

Materials and Technologies: The enclosing roof is covered by a composite structural-glass spaceframe, which is pleated and glazed. The landing deck is made of a polymer matrix reinforced with graphite fiber, while the aircraft would be made of titanium with an ablative (heat-dissipating) coating. The bodies of the pods are either fiberglass or graphite fiber.

VERTICAL TAKEOFF AREA

LARGE-CAPACITY PLANES

FLIGHT DECK

VERTICAL
LANDING AREA

DISTRIBUTION
TRACKS

SMALL-CAPACITY PLANES

PLANE TAXI AREA

PARENT TYPOLOGY

FLIGHT DECK CURVED
IN DIRECTION OF ARRIVING
AND DEPARTING FLIGHTS

SINGLE TAKEOFF AREA

SINGLE LANDING AREA

SMALL- AND LARGE-SCALE FLIGHT DECKS
ACCOMMODATE DIFFERENT SCALES AND
CYCLES OF AIR TRAFFIC

HANGAR LEVEL
UNDERNEATH FLIGHT
DECK

PROTOTYPE 1

DUAL TAKEOFF AREA

PROTOTYPE 4

DUAL LANDING AREA

PROTOTYPE 2

INTERCHANGEABLE
LANDING/TAKEOFF
AREAS PROVIDE
VARIOUS POSSIBLE
AIR-TRAFFIC CYCLES

PROTOTYPE 5

MULTIPLE CONFIGURATIONS OF
SIMPLE BRANCHING SYSTEMS
PRODUCE A LARGE VARIETY OF
POSSIBLE ORGANIZATIONS;
AIRPORTS AS MULTIPLE,
CONTEXTUALLY IMMERSED
INTERMODAL HUBS

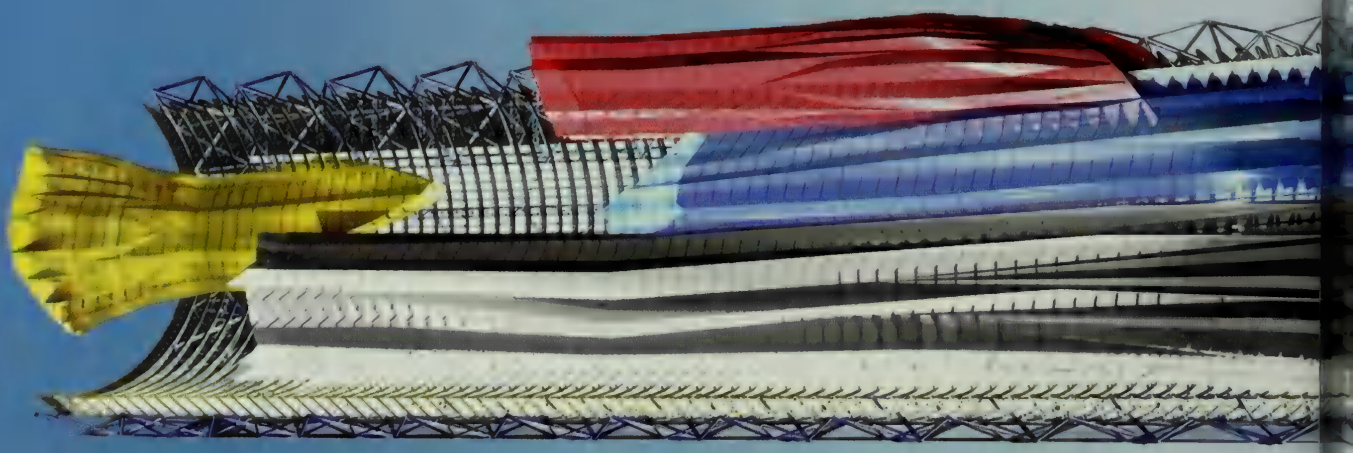
PROTOTYPE 3

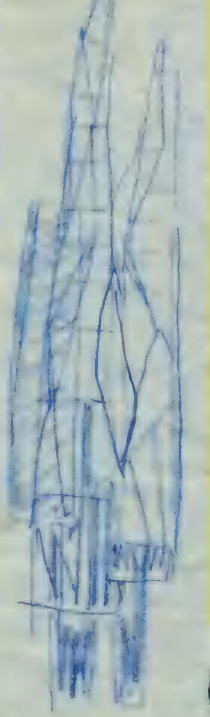
KRUECK & SEXTON combine rockets and rippling forms in a MIXED-USE TOWER

Project: Glass tower
Location: Downtown Chicago, at the corner of Michigan Avenue and Wacker Drive
Architect: Krueck + Sexton—Ronald Krueck, FAIA, Mark Sexton, AIA, Parus Kiravanich, Nemish Shah, design team
Program: Mixed-use office and residential tower with entertainment facilities and preschool/kindergarten
Size: More than 1,484 feet high
Completion Year: 2020
Design Intent: Echoing the embrace of rocket and gantry—dynamism with support—this tower rises in two parts: an irregularly shaped crystal shaft and an adjacent structural frame. By pulling the structure off to one side, the architects create column-free interiors that have 360-degree views and are adaptable to many different uses.

Mechanical, circulation, and outdoor terraces occupy the gantry, which can be extended skyward maintaining the building's status as the world's tallest—no matter what is erected elsewhere. The architects even imagine "beer and hibachi parties" in the gantry's outdoor spaces. Separating support from tower also makes it easier to modify office and living spaces as functions and needs change over time.

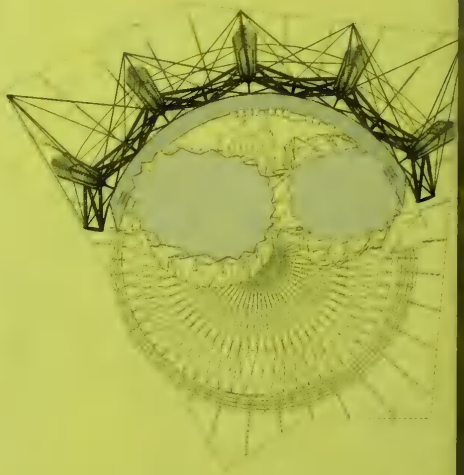
By combining working, living, learning, and entertaining functions in one building, the project forms a "complete environment," says Ronald Krueck, FAIA. "It's building as supreme perk," capable of attracting the best

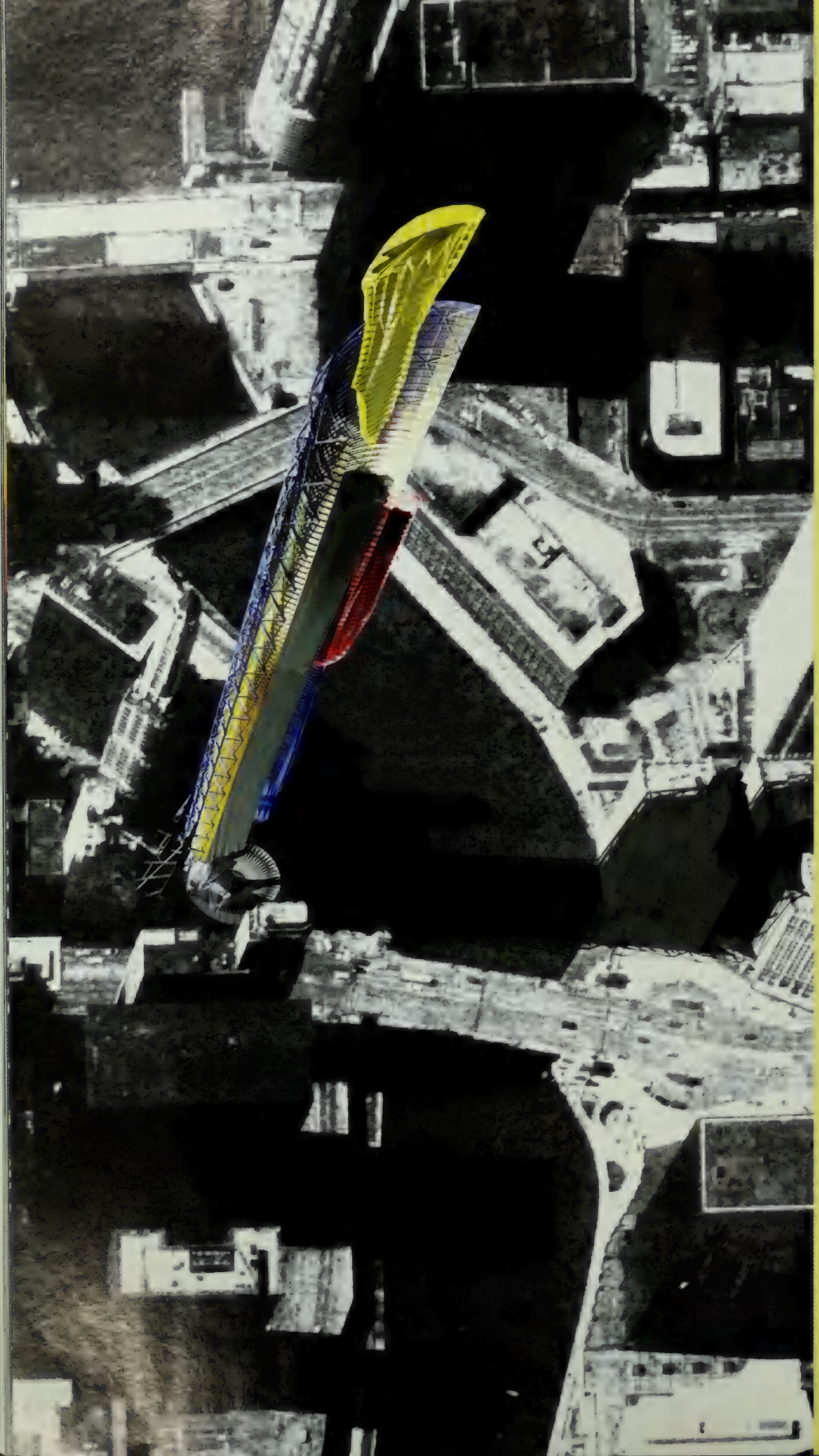




Inspired by both a down-to-earth vase and an icon of late-20th-century technology, the architects designed a building that would synthesize the two (drawings this page). Like a rocket gantry, the skyscraper's ectoskeleton is pure structure. The building's lighting and even its color will change at the flick of a switch.

A steel gantry structure (left and below) embraces the glass tower, allowing it to have column-free interiors and 360-degree views. During the day, the building could serve as a giant sundial (bottom), marking time on its street-level plaza. At night, it will be a beacon of color and light (left).





tenants and employees, he adds. "Commuting is dead. Leave driving for the weekend home."

The "irregular form of the building matches the irregularity of life" in the 21st century, explains Mark Sexton, AIA. Instead of the Euclidian forms of earlier towers, this skyscraper's complex geometries reflect a time when talk of chaos theory and surfing the Web shape our worldview. Thus, the building's glass curtain wall is folded, permitting multiple shafts to snake their way from ground to sky.

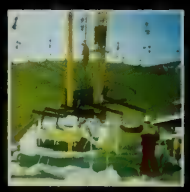
Materials and Technologies: The architects envision a new kind of hyperstrong LCD glass that can switch instantly from transparent to opaque, from red to blue. It also would display various images and textual information on both the interior and the exterior. While an electronic ribbon might project the latest quotes from the New York Stock Exchange on the outside of the building, the residents of apartment 55A could call up video tape of the sunset 12 hours earlier in Hong Kong. Or, exterior facades might present images from the product catalogues of companies with offices in the tower, while a shopping center inside shows real-time views of what's happening in Rio de Janeiro. "We've gone from being a carbon-based society to a silicon-based society," says Sexton, "and glass exemplifies that."

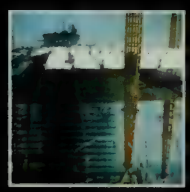
The tower would rise from the dense fabric of downtown Chicago, across the river from Bertrand Goldberg's Marina City towers (top of photo). In a city famous for its skyscrapers, the building's use of color, light, and high-tech glass would stand out.

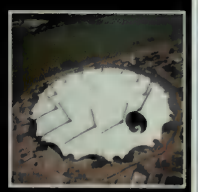
BIRDAIR. TENSIONED MEMBRANE SOLUTIONS FOR THE NEXT

MILLENNIUM

The U.K.'s Millennium Exhibition Dome -- fabricated and constructed by Birdair -- is the largest tensioned membrane dome structure ever built. With a 320 m. diameter and 80,000 sq. m. of floor space, the Millennium Dome could easily house the entire Atlanta Georgia Dome or the Denver International Airport main terminal. In fact, several 25,000 sq. m buildings will be erected inside the dome to help ring in Y2K. The 144 PTFE membrane panels (totaling 188,000 sq. m. of fabric) cover a cable net consisting of 2,600 cables. Twelve 95 m. inclined masts rise through the membrane to support the entire structure. It is a wonder, this Millennium Dome, large, complex and difficult. Such large scale projects have become emblems of Birdair's very special capabilities, but the megadomes represent only one part of Birdair's mission entering the next millennium. Tensioned membrane technology has been applied to: amphitheaters, sports venues, retail malls, auditoriums, museums, hotels, transportation terminals and commercial buildings. This unique architectural form enhances building envelopes as very few building products can. A Birdair structure is technological vision that works. To learn more about how you can use tensioned membrane to create new buildings in the next millennium contact us for complete technical and application information.







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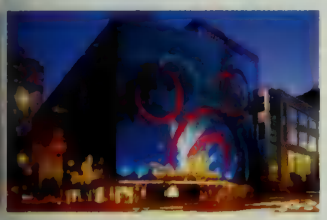
CIRCLE 48 ON INQUIRY CARD

ENTERTAINMENT BUILDINGS

Form in the Era of Fun

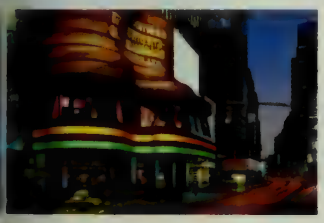
THE LESSONS LEARNED FROM 150 YEARS OF EXPOSITIONS, WORLD'S FAIRS, AND THEME PARKS HAVE FORMED THE BASIS FOR A REVOLUTION IN DESIGN.

by Gregory Beck, AIA



1

DisneyQuest
In Chicago's Gold Coast neighborhood, Disney's newest experiment in themed entertainment must be quiet enough for the neighbors, but loud enough to advertise what's inside.

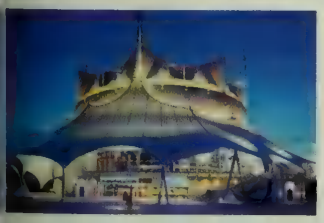


2

Times Square Studios
Disney uses a sculptured, kinetic sign to draw attention to a new television studio on a chaotic corner in New York City.

3

Terminator 2: 3-D Attraction
A prominently placed, themed attraction relies on abstract forms to play up the excitement of the high-tech world of the Terminator films.



4

Cirque du Soleil
The avant-garde circus company sets up permanent residence in Orlando and worries about compromising the mystery of its unusual performances.

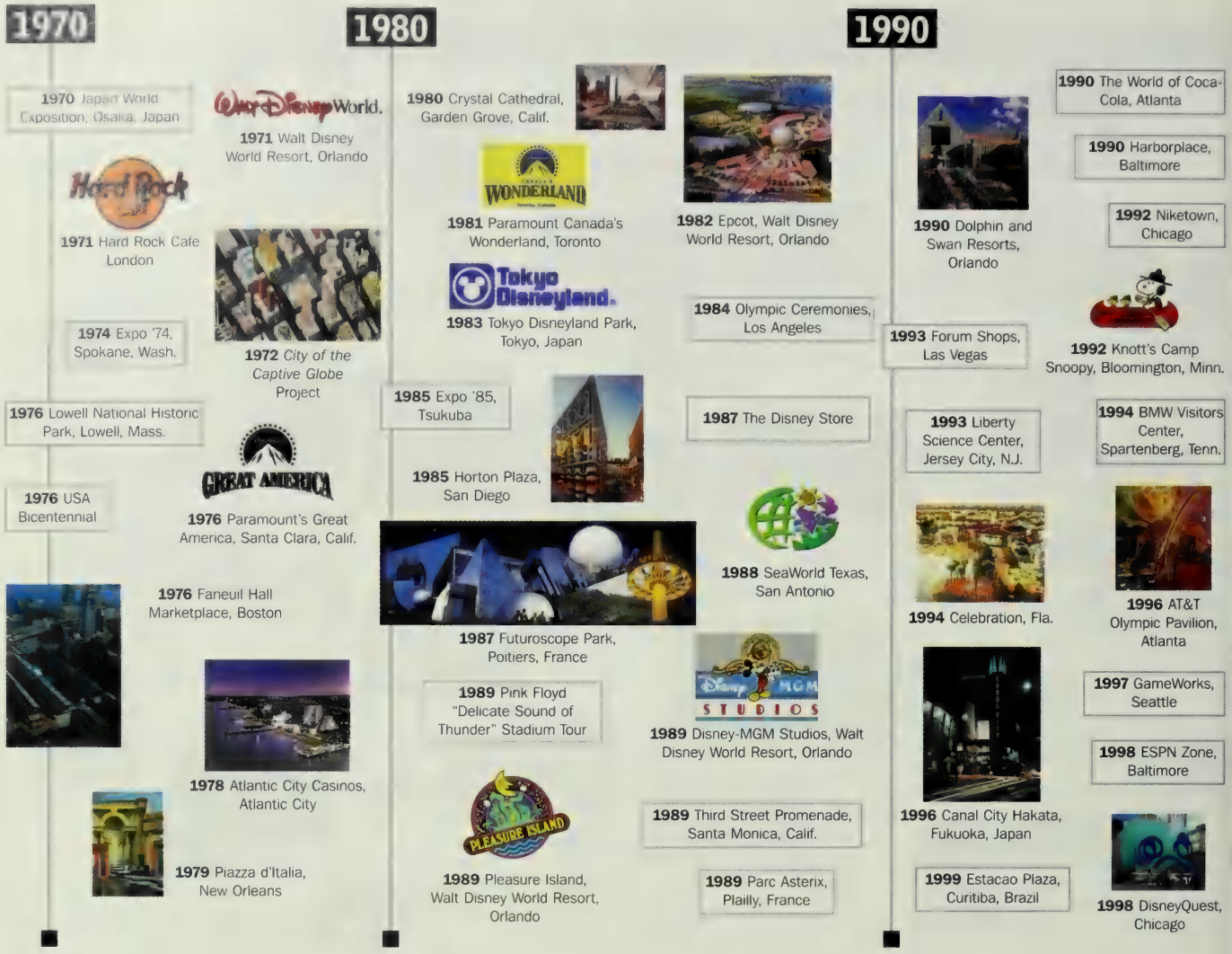
Entertainment design intends to inspire, to convey ideas, and to affect the emotions. The kind of experience that many of us had at the 1964 World's Fair—a fantastic amalgam of pavilions, streets, exhibits, space travel, and the future—is what entertainment design, at its best, should evoke. And the success of it and the other fairs, expositions, leisure attractions, and conceptual projects (such as Archigram's Walking City), of the last 150 years have laid the foundation for a revolution in design.

Today, the lessons learned from these places are being applied to a host of mainstream building assignments. We are moving into an "experience economy," where the value of buildings, objects and services is measured by the quality of the personal interaction they provide us. These are, in turn, redefining the ways in which we learn, shop, and have fun. Entertainment has become a dominant factor influencing design and real estate development decisions the world over. It is reshaping our expectations of what places can do for people, and it has raised the public's estimation of the value of the designed environment. The result is a kind of architecture unplugged from a building's shell, that challenges our traditional views of design. It isn't your parents' architecture.

Entertainment design demands that architects draw on an array of skills. It blends talents in environmental design, media technology, and storytelling to create content-rich environments. As a result, new priorities are emerging from the traditional concerns of architects in which creating content-rich locales and predicting their effectiveness as entertainment environments are what counts. It challenges us to respond to contemporary issues with more than aesthetic answers, deepening the impact of our work. Places can then become the central cast of a story, narrate scripts, communicate brand messages, and enhance information delivery.

Entertainment design is preoccupied more with communication and emotion than architectural form. It integrates digital, electronic, and broadcast media, but it is not about media. It focuses on

Gregory Beck, AIA, designed special-venue theaters at Luxor Las Vegas, retail projects for Swatch, and new development plans for Coney Island. He is the former director of architecture for Sony New Technologies, an assistant professor in the department of industrial design at Pratt, and an instructor at the Harvard Graduate School of Design.



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example, immerses visitors in brand-saturated settings, where everything Nike prevails. Even broadcasters like ABC have gotten into the act, installing a new studio for Good Morning, America in Times Square [page 138] creating a new kind of "brand theater."

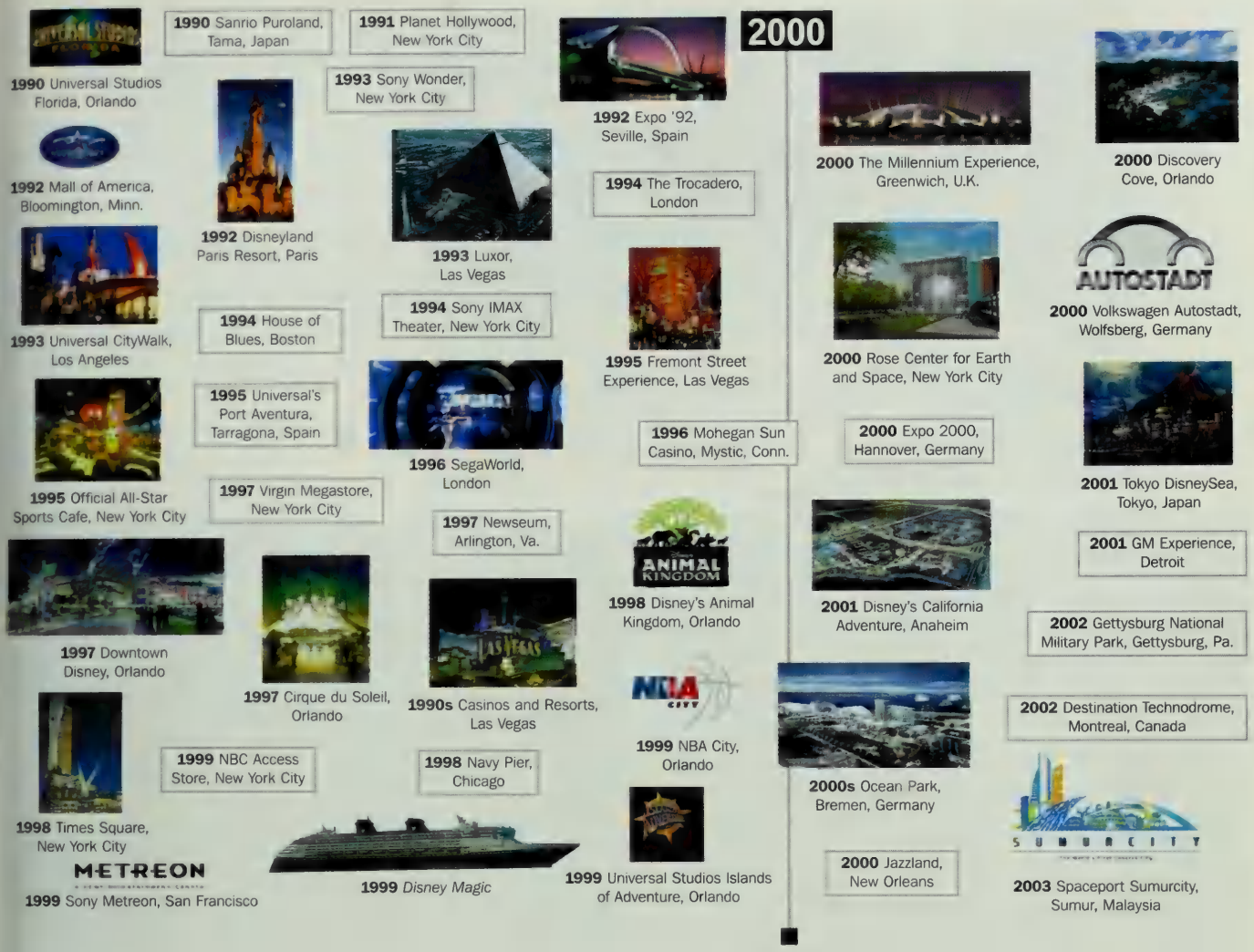
New "culture parks" are doing the recreative setting of Colonial Williamsburg one better, interpreting history with stories and scenes. Even the most hallowed sites are recast. At the Gettysburg National Military Park, for example, a new plan calls for reenacting the battle story from many points of view—the world view, the soldier's view, a child's view, Lincoln's view, and how descendants recall the event—restructuring the historical narrative to engage a wider audience. Along with a new visitors center, portions of the landscape will be returned to their 1863 appearance.

Shifting from the public domain to the private sector

The most striking, and perhaps most important, aspect of the timeline of the development of entertainment architecture may be what it reveals about the journey of entertainment design, from an idealistic, world-changing optimism to corporate-sponsored commercialism. Whereas governments, civic pride, and individuals fueled the early growth of expositions, leisure parks, and even events like the Olympics, most large entertainment projects now are extensions of corporate brand building. Even the highest ideals of world's fairs have fallen prey to political cynicism and the lure of sponsorship money.

Some people think entertainment design has attained apogee. Others worry that it has suffered apoplexy. The 1990s have seen such an eruption of themed projects that everywhere we go, something different is "themed," sometimes to the point of absurdity. Yet, the condensed, edited, escapist stories give us the opportunity to enter new environmental scripts for pleasure and without risk—the New York, New York Casino in Las Vegas attracts people who would never visit New York City, perhaps because they could not afford to or because they perceive it to be overwhelming and unsafe.

In a more direct way than we encounter in films, themed environments invite us to step into stories and participate in their telling. In our digital culture, we find joy in the opportunity to suspend disbelief in search of adventure and redemption. Theming is simply a way of telling stories by using environmental design. Like other forms of design, it can be good, bad, or just plain ugly. Some projects, like Cirque du Soleil in Orlando [page 142] are successful by



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keeping the theming deliberately understated. In other situations the real key to success is how effectively the architects can communicate the story.

Blasting into the future

With its illustrious past and celebrated present, entertainment design will continue to invigorate our ideas about architecture, and serve as a testing bed for new ways of creating guest environments. What will this mix of entertainment, technology and design offer next? Some predictions for the next decade: Entertainment will continue to be a catalyst for urban revitalization projects across the country. Here, special attractions, multiplex/large format cinemas, and local attractions have become the high-impact drawing card necessary for visibility in a competitive marketplace. After years of failed development plans for a troubled district, Disney stepped into Times Square and spearheaded a billion-dollar upgrade, creating one of the most celebrated public spaces. Entertainment design will continue to bring delight to places such as this and make them profit centers.

Finally, entertainment design will be recognized as a multidisciplinary design field. Already, we hear museum directors talking about the "guest experience." Retail merchandisers speak about "immersion," "brand narratives," and "length of stay." And, borrowing a phrase from the computer industry, developers chant, "It's the content, not the hardware, stupid." In many settings that not too long ago we took for granted, we are now seeking stories and an emotional connection to give them context in our lives. Entertainment design

THEMED ENVIRONMENTS INVITE US TO PARTICIPATE IN THE TELLING OF STORIES.

electrifies us with the power to communicate ideas. It has just begun to be a part of our lives.

Are these types of projects a passing fad, soon to be replaced by the next fashionable thing? Are they what Ada Louise Huxtable called "synthetic environments?" The need for fine building design will be essential in the next century. Entertainment design supports this mission, celebrating the opportunity to engage clients and guests with work that is relevant and distinctly valuable. Our modem-laced, hyperreactive society will wait on no one to give form its shape and meaning. ■

1 DisneyQuest Chicago

FORCED BY STUFFY SURROUNDINGS TO VEIL ITS TRUE COLORS, DISNEYQUEST STILL SEIZES ATTENTION.

by David S. Morton

Project: *DisneyQuest, Chicago*
Owner: *The Walt Disney Company—Disney Regional Entertainment Company, operator*
Architect: *Walt Disney Imagineering*
Architect of record: *Walt Disney Imagineering*
Associate architects: *Hodgetts & Fung (Score Zone); Michael Vanderbyl Design (Create Zone and lobby); JMA Associates (Replay Zone, FoodQuest, and Wonderland Cafe)*
Interior designer: *Walt Disney Imagineering*
Lighting: *Walt Disney Imagineering*
Acoustical: *Walt Disney Imagineering*

Size: *90,000 square feet*

When developing projects beyond home turf in Anaheim or Orlando, Disney must follow someone else's rules. Because the company has global plans for DisneyQuest, its new brand of themed entertainment centers, DisneyQuest buildings need to glide effortlessly through the often sticky permitting processes of municipal bureaucracies.

For instance, the first DisneyQuest built outside Orlando appeared this year in Chicago's ritzy Gold Coast neighborhood, where its neighbors would have stood fast against any brash incursions. Exposed, the guts of DisneyQuest would certainly be considered intrusive; it's a floridly styled interactive theme park driven by compact, virtual-reality attractions. Outside, however, DisneyQuest is a windowless cube, a "sophisticated and urbane" approach, in the words of the project's chief Imagineer, Larry Gertz. By Disney standards, the exterior design is basically mute.

Loudly mute. The city forbade any exterior animation, fearing that it would confuse traffic, yet the surface of the building is stubbornly active. The glass panels that curtain the four stories above the ground floor are sprayed on their interior faces with an iridescent paint, a

custom shade of turquoise known among the project's Imagineers as "throat-drop blue." Metal flecks in the paint give the facade sparkling variations, especially on the convex surface above the main entrance on Ohio Street.

Like many Disney properties, the building's exclamation point and primary distinguishing factor is a huge "Hurricane Mickey" logo on the Ohio Street facade. A reflective mosaic composed of 285,000 one-inch-square acrylic tiles secured to the glass by silicon adhesive, the looping logo has the visual burn of neon without neon's pale glare. The same logo, this time a similarly sized etching in glass, dominates the Rush Street facade.

Disney is counting on what is essentially a high-profile billboard strategy to generate excitement for

attractions that, for the most part, represent the cutting edge of entertainment technology. Considering the power of the mouse logo in the marketplace, it doesn't seem so great a risk. ■

David S. Morton, a freelance writer in New York, was formerly on the editorial staff at RECORD.

Except for a giant logo, DisneyQuest's relatively quiet glass shell (below) hides the wild exuberance of the attractions within (right and opposite).

2 Times Square Studios New York City

DISNEY'S IMAGINEERS AND HLW CONCOCT AN ATTENTION-GETTER ON A PROMINENT SITE AMID THE CACOPHONY OF TIMES SQUARE.

by Soren Larson

Project: *Times Square Studios, New York*
Owner: *Disney Enterprises Inc.*
Exterior and signage designer: *Walt Disney Imagineering*
Architect of record: *HLW International LLP—John Gering, partner-in-charge; James Lee, project manager; Stephen Newbold, project architect*
Signage architect: *Kupiec Architects*
Engineers: *HLW (structural), Tom Gasbarro, project engineer; Edwards & Zuck (mechanical, plumbing, electrical)*
Consultants: *Gordon H. Smith (exterior walls); The Systems Group (production control systems); Sony Electronics; The Lighting Design Group (studio lighting and rigging); Pook, Diemont & Ohl; Cerami & Associates (acoustical); Van Deusen & Associates (elevators); IO Media; Jerome Gillman Consulting Architects (building codes)*
Construction manager: *Tishman Interiors Corporation*
Curtain wall: *W+W Glass Systems*
Glazing: *Schott Corp., W+W Glass Systems*
Special doors: *Industrial Acoustics Co.*
Special surfacing: *Crossfield Products*
Lighting: *Arri/transtechnik (studio rigging); Production Arts (system integrators); Electronic Theater Controls (studio controls); Sony Electronics (production controls)*
Conveyance: *Nustar Elevator Construction Co.*
Electronic sign: *Sony Electronics (jumbotron); Multimedia (LED signage)*

WWW *For more information on the people and products involved in this project, go to* **Projects** *at:* ***www.architecturalrecord.com***.

Times Square was already quite bustling by the time the Walt Disney Co. decided to build a television studio there to host ABC's *Good Morning America* and other programming. Nevertheless, Disney's Imagineers, together with HLW International, managed to design an eye-popping facility on the site that they think cuts through the clutter.

"We wanted to create a window onto Times Square, and we were lucky to find this location," says Wing Chao, FAIA, executive vice president of master planning, architecture, and design at Disney Imagineering. "But the big question was, 'How do you stand out?' The [exterior] lighting was the key."

That lighting takes the form of a constantly changing, 4,000-square-foot video sign that wraps around the northwest corner of the new Times Square Studios, creating a 24-hour-a-day parade of news, promotions, and live broadcasts. "This is media as architecture," says Eddie Sotto, who as senior vice president at Imagineering headed the design team (he has since left the company). "We wanted something both sculptural and kinetic."

The other essential feature is the 4,600-square-foot Marquee Studio. The project's entire design, begun in spring 1998, sprang from a single viewpoint: a clear sightline up Broadway north from 44th Street, taking in all the area's frenetic energy. The architects centered the design around maximizing this view and cantilevered the second-floor studio over the sidewalk.

Before any new construction, the first step was to gut the interior of the existing structure from the fifth floor down. Heavy concrete columns in the middle of the space were taken out, and the load was shifted to steel trusses along the edge. The ground floor hosts a second studio with three removable glass panels—the 14,000-pound units are floated on cushions of air, allowing them to be easily moved to engage passersby on the street. The glass in the ground floor and in the Marquee Studio was manufactured by Schott Corp. to have ultra-low reflectivity, maintain clarity, and provide soundproofing.

So far, Disney's decision appears prescient: *Good Morning America*'s ratings are already up. ■

Times Square Studios' flowing sign adds a kinetic, constantly changing presence to a busy corner (this page, opposite top); the Marquee Studio was cantilevered over the sidewalk to take full advantage of the view up Broadway.

3 Terminator 2: 3D Attraction Hollywood

TO PRESERVE THE HIGH-TECH EXCITEMENT OF THE TERMINATOR MOVIES, A THEATER IS CLOTHED IN ABSTRACTIONS.

by David S. Morton

Project: *Terminator 2: 3D Attraction, Universal Studios Hollywood*
Owner: *Universal Creative Planning and Development—Bob Ward, senior vice president*
Architect: *RIOS Associates Inc.—Mark W. Rios, Frank Clementi, Polly Furr*
Architect of record: *Morris Architects—Gerald Palmer Smith, project manager; Walt Geiger, design principal; Gerald Koi, managing principal; Sheila Rowley, project architect; Jed Prest, Richard Schneider, Timothy Burnett, John McWilliams, B.K. Cho, Javier Negroni, Calvin Peh*
Engineers: *IWA Engineers (civil); Ficcadenti & Waggoner (structural engineer); Syska & Hennessy (mechanical, electrical)*
Consultants: *Associates in Architecture & Design Ltd. (retail interiors, signage and graphics); RIOS Associates (landscape); Lighting Design Alliance (lighting); City Design Group (water plaza)*

Sources
Building skin: *Mimetic Poly-Alloy*
Sound doors: *Krieger*
Automatic door closers: *Horton*
Retail millwork: *K and Z Cabinets*
Paints: *ICI*
Acoustical panels: *Sound Control*

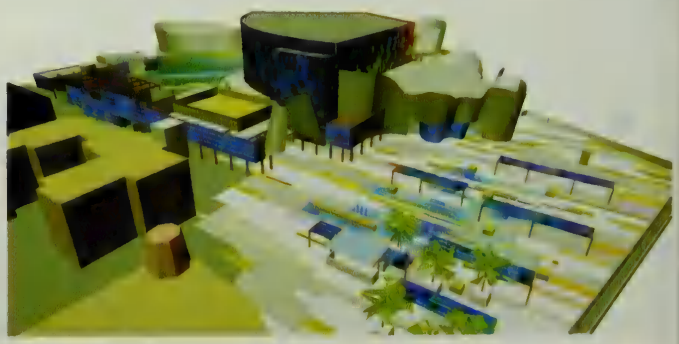
WWW *For more information on the people and products involved in this project, go to* **Projects** *at:* **www.architecturalrecord.com**

See a Terminator movie too many times, and the thrills diminish. So it follows that if you pack too much Terminator into a conspicuously themed building, you risk corrupting the brand. Overdoing a theme is exactly what architect Mark Rios, FAIA, tried to transcend when designing exterior elements for Universal Studios' newest attraction, a 3-D experience based on the Terminator films. The building, which sits on top of a six-story parking garage at the edge of a Hollywood theme park, is one of Los Angeles' more visible structures. "We wanted to avoid any sort of literal theming," says Rios, "the building should be a piece of architecture and not a Xerox copy of the movie."

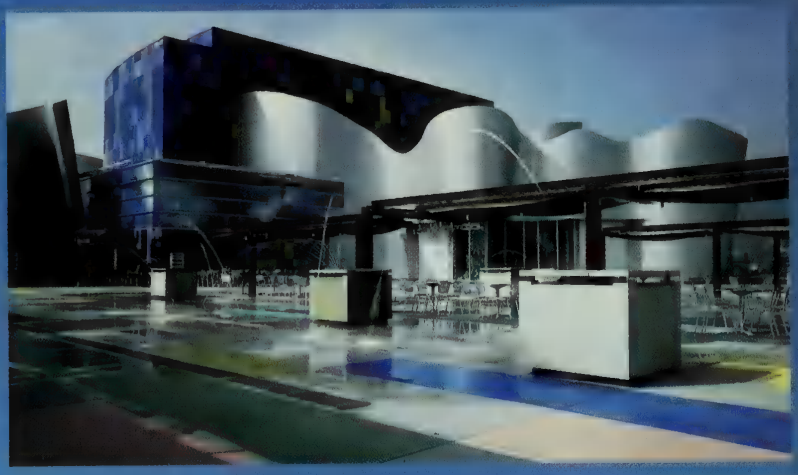
The curving roof and wall elements, built of plaster and painted silver, refer to the morphing technology that the movie *Terminator 2: Judgment Day* introduced to the world. On the theater volume, a mosaic of variously sized, colored rectangular pixels in carefully arranged patterns creates a more abstract high-tech impression. Small to mid-size pixels cover the facade seen from inside the park, while medium to large pixels cover the side of the building visible from the freeways and the L.A. hills. In effect, the pixelation—whether seen up close or from afar—breaks up the theater volume's mass. As a result, the building promotes itself while also conversing with its context. ■

1. *Theater*
2. *Preshow*
3. *Retail*

Visitors don't encounter Terminator cyborgs until they enter the 3-D theater (above).



Undulating plaster elements for rooftop and retail areas, painted a metallic silver, allude to the morphing technology featured in the Terminator sequel. The reds, blues, and greens of the exterior mosaic respond, respectively, to the tiles of neighboring roofs, the sky, and the plants growing on the parking garage below the theater (bottom inset).



4 Cirque du Soleil Downtown Disney, Orlando

A CIRCUS SETS UP PERMANENT RESIDENCE AND HOPES TO MAINTAIN THE MYSTERY OF THE PERFORMANCES WITHIN.

by David S. Morton

Project: *Cirque du Soleil, Downtown Disney, Orlando*
Owner: *The Walt Disney Company*
Architects: *Rockwell Group–David Rockwell, principal; Robert Ashton, Nancy Thiel, associates in charge; Michelle Biancardo, Howard Chang, Carl D'Alvia, John Garrison, Alex Lee, Joe Richavalsky, Sally Ross, Nina Stern, EveLynn Shoenstein, Paul Song, Jay Valgora*
Architect of record: *Glover-Smith-Bode*
Interior designers: *Rockwell Group; Scéno Plus; Walt Disney Imagineering; Cirque du Soleil*
Consultants: *Scéno Plus (theater design); Cirque du Soleil–Michael Crête (set design); FTL/Happold (fabric canopy)*
Structural engineers: *Walter P. Moore & Associates*
General contractor: *Walt Disney Imagineering and Clark Construction Group*

Size: *70,000 square feet*

Sources
Wall surfacing: *Dal-Tile; Country Floors; Artcraft; Architectural System*
Paint: *Benjamin Moore; Sherwin Williams*
Laminate: *Abet Laminati*

WWW *For more information on the people and products involved in this project, go to* **Projects** *at:* **www.architecturalrecord.com**

Unlike other major circus operations, Cirque du Soleil, the Montreal-based circus company, doesn't come to town too often. With its unusual convergence of performance and art, Cirque is probably one of the few brands that familiarity could harm. But in two tourist capitals of the world, Las Vegas and Orlando, cities where much of the population is transient, the company has risked the rarity of its spectacle by building two permanent stages.

At the Bellagio Hotel and Casino in Las Vegas, the circus performs inside the hotel. The Orlando theater, however, stands alone and unattached on the West Side of Downtown Disney at Walt Disney World. With the exception of training facilities, it is probably the first permanent circus structure to be built anywhere in over a century, says David Rockwell of New York City-based Rockwell Group, the theatrically inclined entertainment architecture firm that designed the building.

Disney envisioned a celebratory building that, like Sleeping Beauty's castle at the Magic Kingdom or the giant geodesic sphere at EPCOT, would be a visual anchor for Downtown Disney, a mock-urban area of Walt Disney World filled with retail stores and restaurants. Cirque du Soleil, meanwhile, was worried that too vibrant a

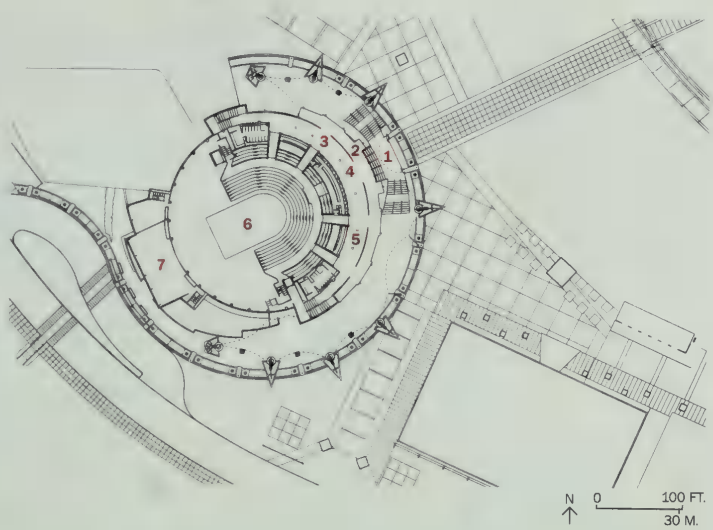
shell might outperform the splendor awaiting audiences inside and fix a single image of the circus too firmly in the minds of the public. Essentially, Cirque wanted the building white, like many big tops in Eastern Europe.

The height requirements of the fly loft and suspended performance platform, the need to house backstage rehearsal and physiotherapy spaces, and the difficulties of building below grade in Florida, meant that the building would stand big and tall, 90 feet high in the final design. This was an unwieldy volume to hide comfortably beneath a big top, so the architects worked from the inside out, shaping a cylinder 184 feet in diameter around the already fixed dimensions of the stage and seating.

Borrowing from the big top

Apart from the cylinder, the architects adhered to traditional circus

1. *Entry*
2. *Balcony*
3. *Lobby*
4. *Concessions*
5. *Retail*
6. *Performance space*
7. *Rehearsal hall*



The trusses, rigging, and canopy of this permanent circus structure are straight from the big top (opposite page and below). The large cylinder, needed to house a large performance space, is not.

At night, the building takes on a more colorful life, and the depths of the white expanses are revealed in shadow (right). Cirque du Soleil is, of course, a circus, and so unlike most theaters, the seating circles around the performance area (below).

iconography. Four vertical trusses, peaking 125 feet above the ground, reach above the roof of the cylinder, emulating a big top. The trusses, attached by rigging to the crests of the crowning roof elements, don't actually support the roof, but provide moorings for the rigging of the building's real canopy. The roof crown is an EIFS construction that masks mechanical equipment and merely mock the appearance of a canopy.

The fabric canopy, 21,100 square feet of Teflon-coated woven fiberglass material, shapes an outdoor space on the most public half of the building. It also mitigates the imposing size of the cylinder by visually splitting the volume in half and by easing the connection between the roof and trusses, high above and out of reach, to ground level where visitors walk among the rigging.

Peering inside, a flood of color

From the West Side promenade, visitors may notice only limited areas of color: the harlequin-themed patterns painted on the concrete steps leading to the second-floor entrance lobby. The platforms double as preshow performance spaces, but when no one's performing, which is most of the time, the building's public face is very quiet. The canopy obscures much of the view into the interior. Only a small logo on the stairway's main landing announces that Cirque du Soleil performs inside.

When visitors come nearer to the entrance, however, and under the lip of the canopy, the interior's vivid reds and blues appear through the lobby glazing. Here, beneath the canopy, the building reveals its depth and, through the bleeding tones, the now unrestrained spirit of Cirque du Soleil performances.

The visual temperature rises even higher at night. Light directed onto the undulating roof elements casts new depths of shadow, color-tinged light from the lobby fills the area under the canopy, and backlighting lends the fabric the glow of moonlight.

"If from far away the building is an object," says Rockwell. "Up close, it's truly a space." ■

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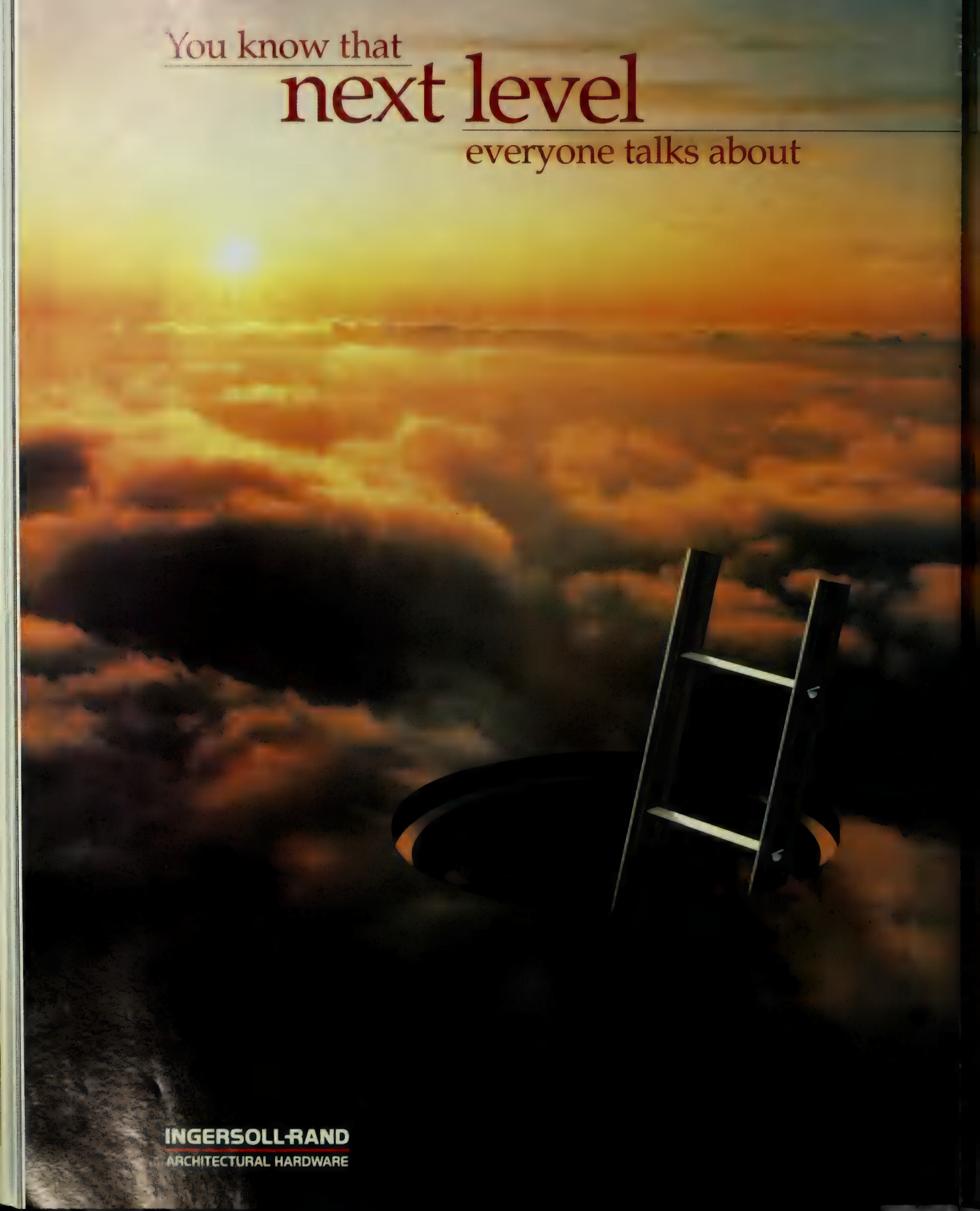
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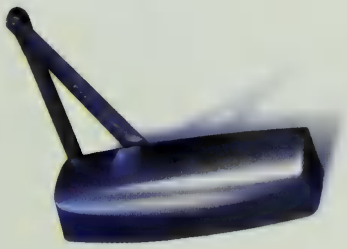

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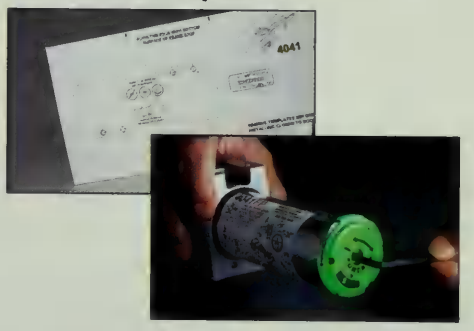

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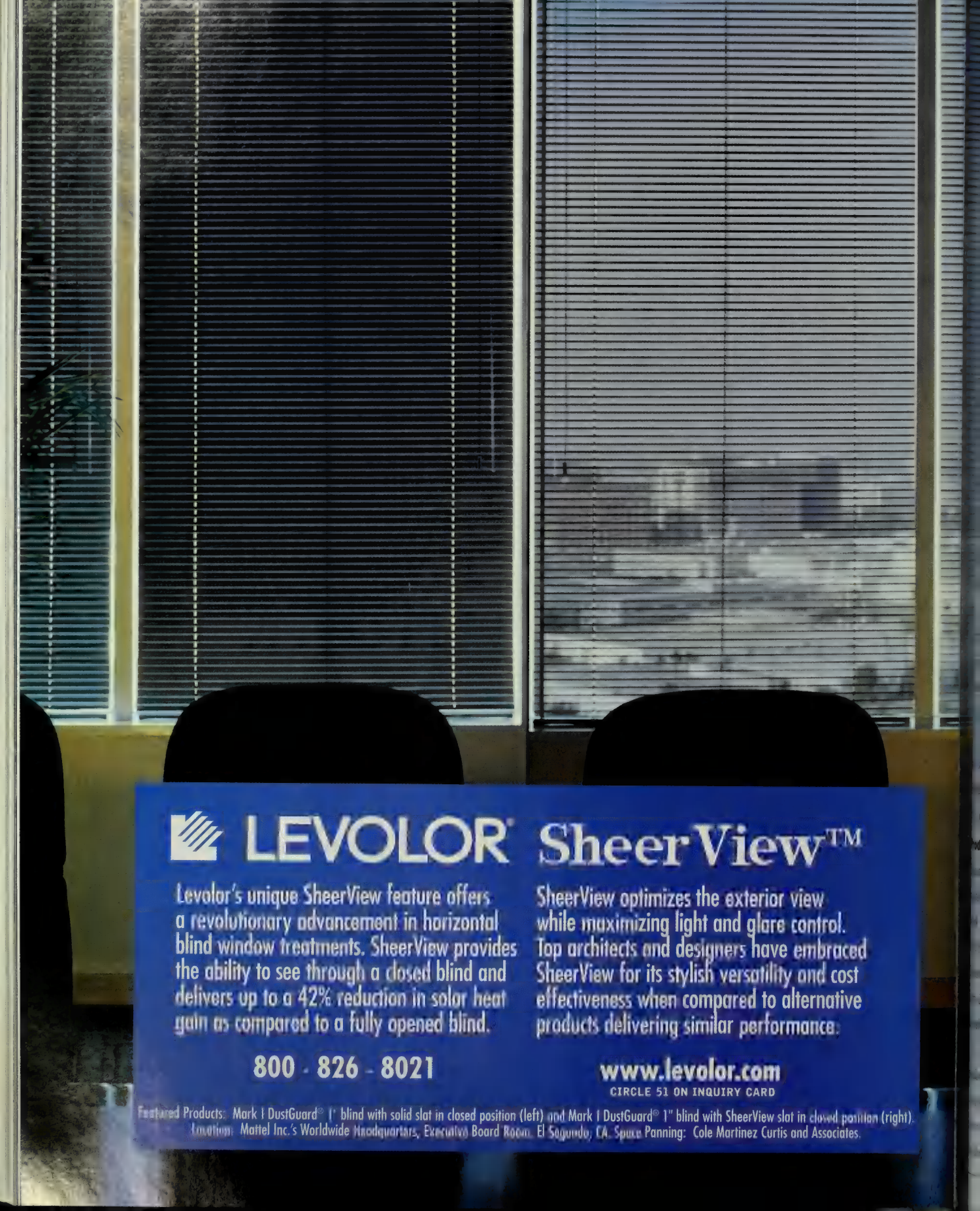
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PRODUCT REPORTS

Although it highlights our December issue, the Product Reports process actually commences much earlier in the year. As early as June, we start contacting building product manufacturers to identify what have been the newest, hottest products introduced that year. Over the course of three months, we process hundreds of submissions, organize them according to CSI category, and then present them to a panel of design professionals who evaluate the products' innovation, problem-solving potential, and architectural interest.

This year, a variety of products sparked the judges' interest, from a cement made through a more sustainable process, to a prefabricated wood-framing system, to a child-size waiting-room couch. Products were scrutinized not only for aesthetic appeal, but also for technological merit.

"It is really exciting to see something that's not just pretty, but an example of elegant engineering," explained judge Margaret Helfand, FAIA. All our judges admitted that at the end of the panel, they walked away with ideas for current or future projects.

Product Reports Judges 1999

Selecting an informed jury is a vital component of presenting our readers with a valuable resource each year. Our jury members, whose work covers the residential, commercial, and institutional markets, each brought their own expertise to the panel. Our special judge for Division 1, which covers architectural software and hardware, was Jerry Laiserin, AIA. Laiserin is a technology consultant and lecturer, as well as a contributing editor to RECORD.

Mark Kalin, AIA, is president of Kalin Associates, an independent specification consulting firm located in the Boston area. He is a registered architect, certified construction specifier, and licensed construction supervisor. Kalin is also cochair of the Specifications and Building Technology PIA.

Michelle Brewster has been a resource coordinator for Hellmuth, Obata & Kassabaum's New York office since 1995. She has set up a 1,000-square-foot-plus architectural/interior library and a product database for the firm's intranet site.

Nestor Bottino, AIA, joined the New York office of Hardy Holzman Pfeiffer Associates in 1987. An associate of the firm, Bottino received a master of architecture degree from the University of Texas at Austin and a bachelor's degree in environmental design from Texas A&M University.

Margaret Helfand, FAIA, of Helfand Myerberg Guggenheimer Architects, New York City, has served as a planning and design consultant for the City of New York and the University of California at San Francisco. Her current projects include Brooklyn's Flatbush Public Library and a science complex for Swarthmore College in Pennsylvania.

Barbara Heller, AIA, of the Washington, D.C., specifications consulting firm Heller & Metzger PC has been responsible for the preparation of more than 300 project manuals for a range of building types. Heller is a member of the AIA Documents Committee and chair of the Specifications and Building Technology PIA. Rita F. Catinella

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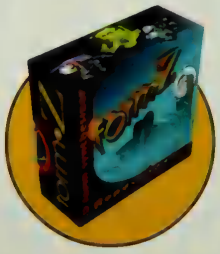

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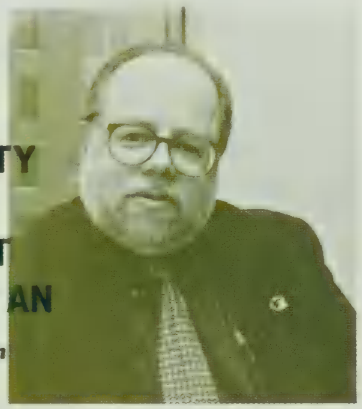

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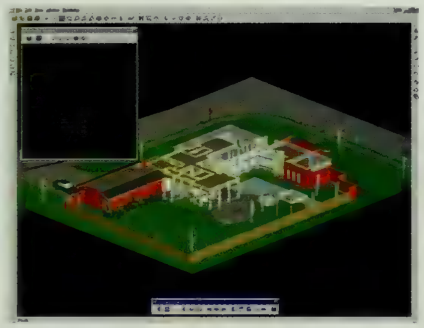
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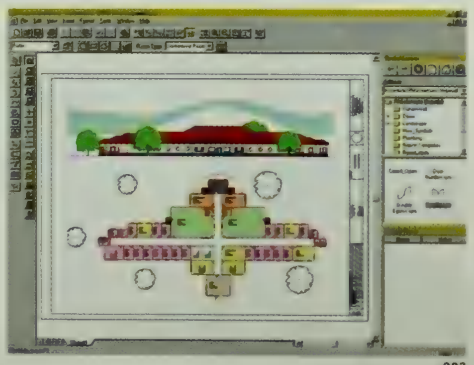
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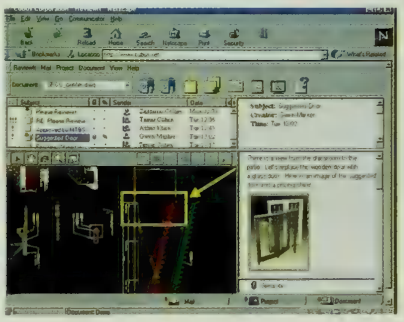

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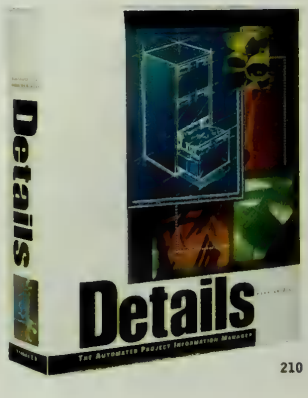

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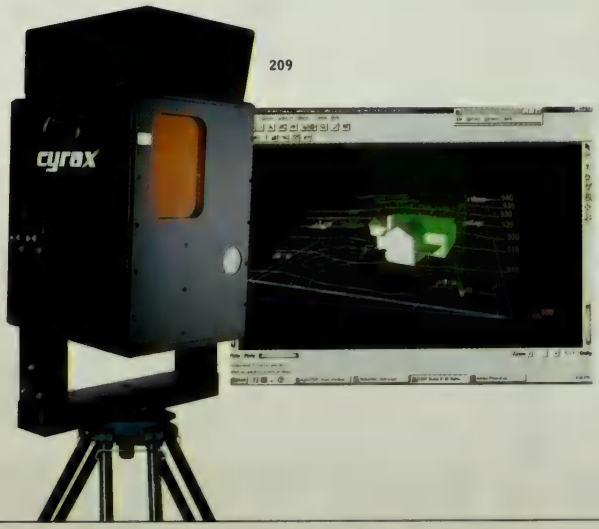

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CNA PRO

CIRCLE 54 ON INQUIRY CARD

SITE WORK

Earth retainage • Outdoor sculpture & ornament • Site, street, & mall furnishings

Our judges appreciated the refined design of the site furnishings submitted this year, which ranged from outdoor shelters to cafe seating. Other site work that caught their attention included an efficient rain-storage chamber and an outdoor fountain sculpture that is part of the landscape of a Napa winery.

IT'S NICE TO SEE A HIGHER LEVEL OF DESIGN IN SITE FURNISHINGS.

—*Mark Kalin*

Fountain sculpture
This fountain sculpture, designed by Gordon Huether for the Artesa Winery, is composite resin, fiberglass, and powdered aluminum. 707/255-5954. Architectural Glass Design Inc., Napa, Calif. CIRCLE 212

Outdoor shelter
Kaleidoscope is a pre-engineered modular wall, canopy, and seating system. Combined individual components can define an exterior space or create a shelter. 800/521-2546. Landscape Forms, Kalamazoo, Mich. CIRCLE 213

Water-storage chamber
Rainstore[3] is a subsurface water-storage chamber. An impermeable membrane liner will allow Rainstore[3] to offer long-term storage for irrigation or fire protection. 800/233-1510. Invisible Structures Inc., Aurora, Colo. CIRCLE 214

Stately bench
The Withers four-seater bench, which comes in wrought iron or wrought aluminum, is shown here in a clear powder-coated finish over orbital-sanded aluminum. 804/358-2385. McKinnon and Harris Inc., Richmond. CIRCLE 215

Cafe seating
The Strada armchair and table are designed for lightweight commercial use. Made of warm beechwood, all pieces have two polyester coats. 415/389-8300. Smith & Hawken, Mill Valley, Calif. CIRCLE 216

Bringing the outdoors in
The Jackson Settee is offered with a fabric seat insert for contract and residential interiors. 800/456-6483. Weatherend Estate Furniture, Rockland, Maine. CIRCLE 217

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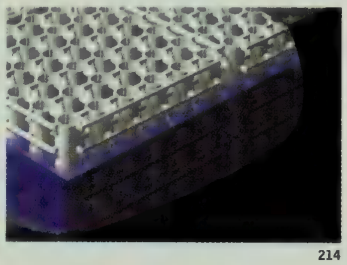
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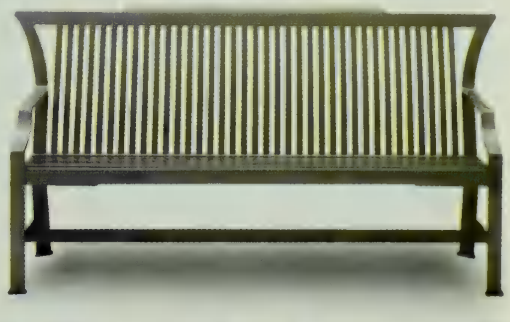
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CONCRETE EVIDENCE:

LEHIGH WHITE CEMENT ENRICHES OUR LIVES

All along your path in life, concrete made with Lehigh White Cement has cemented your journey. When you were born, concrete was right there in the hospital silently keeping you safe from harm. You ran and skipped and jumped on it at recess. You studied with it in school and admired it in art galleries. You live with it in your home and swim with it on vacation. You never really think about it, but concrete made with Lehigh White Cement has been building better communities.

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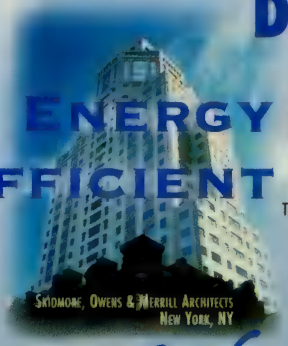
Working together to build our communities.™



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CIRCLE 55 ON INQUIRY CARD

CONCRETE

Concrete materials • Concrete accessories • Form liners • Precast concrete

Our judges were pleasantly surprised by the selections in the concrete category. They were particularly impressed by a cement made from a recycled slag material that makes the cement-making process much more environmentally friendly. Topping systems offering a variety of flooring options also captured their interest.

IT'S IMPORTANT TO KEEP IN MIND THAT THE WAY THESE PRODUCTS ARE PRESENTED IS NOT THE ONLY WAY THEY CAN BE USED. —*Nestor Bottino*

Four-inch form unit
Complete with 90-degree corners, the Blue Maxx Form Unit provides stay-in-place forming and insulation for a four-inch reinforced-concrete wall. 800/293-3210. AAB Building System Inc., Cobourg, Ontario, Canada. CIRCLE 218

Flooring option
Bomanite Thin-Set, a polymer modified topping system, allows the installation of a thin, imprinted Bomanite topping to any structurally sound concrete substrate. 800/854-2094. Bomanite Corporation, Madera, Calif. CIRCLE 219

Precast-concrete wall panel
Slenderwall architectural precast-concrete brick wall panels reduce building foundation, structure, shipping, installation costs, and thermal transfer. Part of New York City's 42nd Street renovation project, the panels create a single, efficient exterior wall system. 800/547-4045. Easi-Set Industries, Midland, Va. CIRCLE 220

Environmentally friendly cement
GranCem is a ground granulated blast-furnace slag material that typically replaces, kilo for kilo, a portion of the other cement in mixtures. A recycled material, GranCem makes concrete more durable, easier to handle, and brighter, as seen here in the Rock and Roll Hall of Fame. 636/537-6057. Holnam Inc., Chesterfield, Mo. CIRCLE 221

Stone replication
The Thin-Crete stamped overlay system, combined with a copolymer resin, can be colored and imprinted with Increte texturing tools to replicate natural brick, stone, and slate. 800/752-4626. Increte Systems Inc., Tampa. CIRCLE 222

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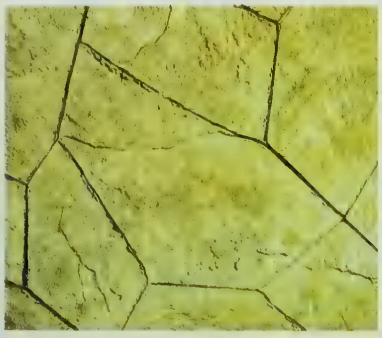
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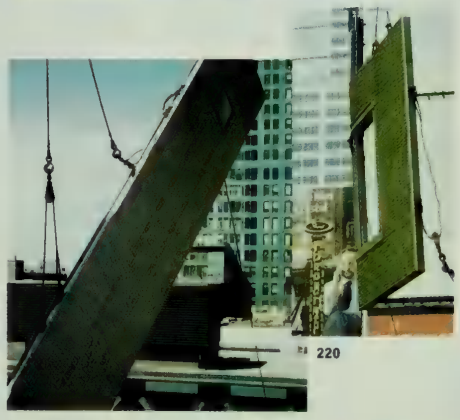
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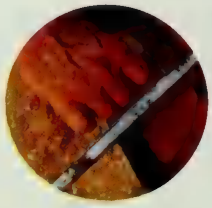
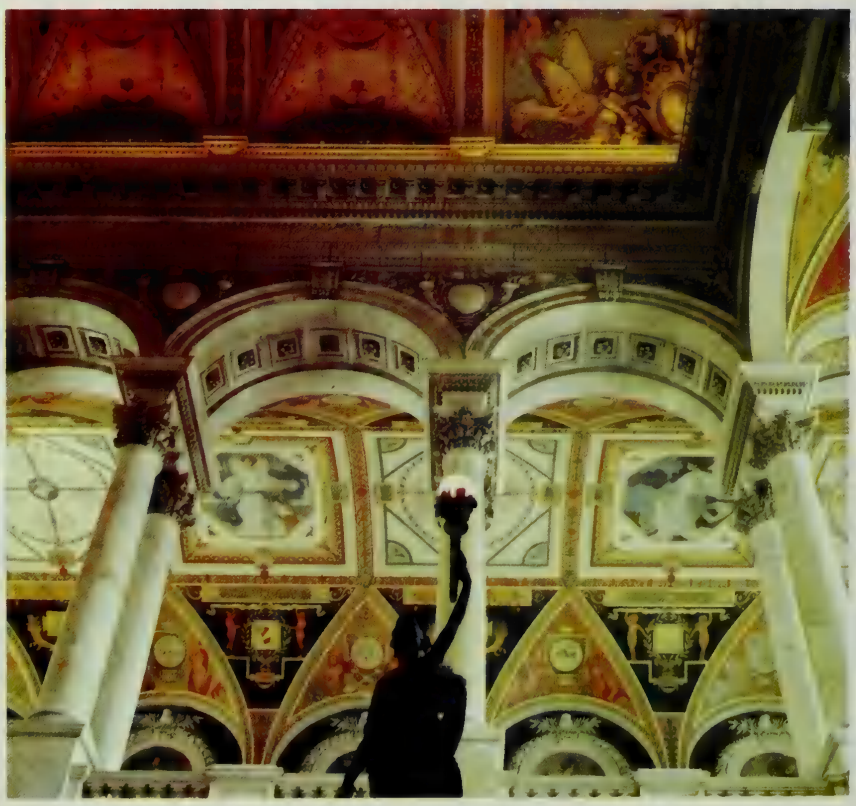
WE GIVE OLD BUILDINGS NEW LIFE



The Library of Congress. One of the finest examples of 19th Century architecture in America. This magnificent structure has just gone through a thorough interior masonry restoration. Commissioned by the Architect of the Capitol, the work was done by union masonry contractors and craftworkers. Only they have the skill to restore the original beauty of the tile, marble, stone and mosaic materials that give this building its character. The International Masonry Institute has a wealth of information, as well as a fully trained staff of architects and engineers who can help answer your questions about masonry restoration or the design and construction of new masonry buildings. Find out more: Call us at 1-800-IMI-0988, or visit our Web site: www.imiweb.org



The International Masonry Institute

WE BUILD FOR LIFE

UNION BUILT BY THE BEST HANDS IN THE BUSINESS

The International Masonry Institute — a labor/management partnership of the International Union of Bricklayers and Allied Craftworkers and the contractors who employ its members

MASONRY

Cast stone • Simulated stone • Stone • Unit masonry

The judges who reviewed masonry took an interest in how manufacturers offer materials that stand on their own, with their own material identity, instead of imitating other things. They also wanted to learn more about sophisticated technologies in fabricating stone into pre-engineered panels, such as the waste-free process described below.

IT'S CLEAR MANUFACTURERS ARE BUILDING BETTER MOUSE TRAPS AS WELL AS USING NEW TECHNOLOGIES TO RE-CREATE FAMILIAR MATERIALS. —*Barbara Heller*

Waste-free stone cutting
Architect Angelo Mangiarotti designed the roof of the IMM Carrara SPA headquarters using a new profiling machine that cuts curved stone with a diamond wire tool, eliminating process waste altogether. 323/879-0950. Italian Trade Commission, Los Angeles. CIRCLE 223

Two new form liners
New, low-reuse form liners are eight times lighter than conventional urethane-rubber form liners and can be cut around intricate areas such as archways and windows. Removable keystone form liners eliminate seams that are created when form liners are ganged or configured together. 800/752-4626. Increte Systems Inc., Tampa. CIRCLE 224

Historical brick shapes
The 17th Century line of shapes for decorative brick work are created using the old-fashioned, wood-mold technique for brick making. 800/5-BORAL-5. Boral Bricks, Roswell, Ga. CIRCLE 225

Unusual dry wall
Chapel Stone garden walls, edging, and retaining walls can be laid as a dry-stack wall (with no mortar) up to a three-foot height, or as a mortared wall. 800/426-4242. Hanover Architectural Products, Hanover, Pa. CIRCLE 226

Nature fossil stone
Coral Stone molds are created from hand-selected coral reef stones that are cut and sized to expose fossil patterns and delicate coral surface characteristics. 800/255-1727. Cultured Stone Corporation, Napa, Calif. CIRCLE 227

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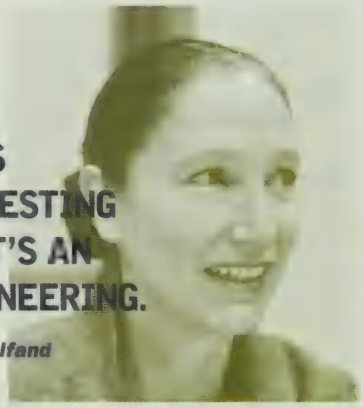
CIRCLE 56 ON INQUIRY CARD

METALS, WOOD, & PLASTICS

Architectural woodwork and metalwork • Laminates • Prefabricated structural wood • Solid polymer fabrications

Our panel was surprised to learn that it took 25 years for the Japanese KES wood-framing system to be made available in the U.S. Other favorite materials included translucent laminates that diffuse light; a cheap, custom laminate program; engineered straw board with nontoxic resins; and an arsenic-free pressure-treated wood.



THE PRE-ENGINEERED KES SYSTEM WAS THE MOST INTERESTING THING I SAW ALL DAY. IT'S AN EXAMPLE OF ELEGANT ENGINEERING.

—Margaret Helfand

Surfacing with recycled solids
Cottonwood is the newest pattern to be added to Avonite's series of solid surfacing. The colored chips are produced from recycled solid materials. 800/428-6648. Avonite, Albuquerque. CIRCLE 228

Prefabricated wood framing
The Japanese-engineered prefabricated wood-framing system KES is now available in the U.S. 206/522-4445. Shelter USA, Seattle. CIRCLE 229

Custom door work
Southern Architectural Woodwork custom builds veneered flush doors that accommodate the most complicated blueprint demands for reveals, inlays, and grain matching. 803/754-4619. Southern Architectural Woodwork, Columbia, S.C. CIRCLE 230

Looks like concrete
The Concrete Collection of Surell solid-surfacing material is a renewable and nonporous substitute for concrete. 800/FORMICA. Formica, Cincinnati. CIRCLE 231

A better Vitricor
Flex V is a richer textured, more stain-resistant, and more workable reformulation of the Vitricor series of laminate. 800/526-9469. Decorative Products Division, International Paper, Odenton, Md. CIRCLE 232

Cut with water jets
Robinson Iron can translate intricate, 3-D drawings onto metal with water jets. The technique is quicker than the alternative and won't heat up the metal. 256/329-8486. Robinson Iron, Alexander City, Ala. CIRCLE 233

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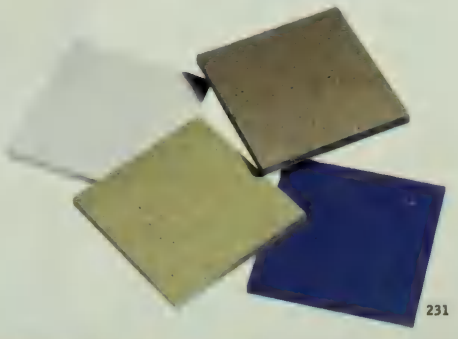

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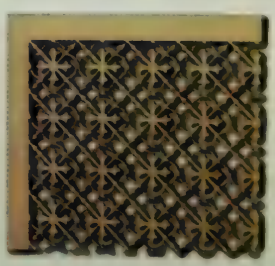

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METALS, WOOD, & PLASTICS

Architectural woodwork and metalwork • Laminates • Prefabricated structural wood • Solid polymer fabrications

Test chamber for joint covers

C/S Group has developed a chamber for testing the strength of standard and seismic joint covers up to 70 inches wide. The chamber replicates four-way movement, including vertical displacement and lateral shear. 908/236-0800. C/S Group, Muncy, Pa. **CIRCLE 234**

Metal design for metal panel

Gage has added a new panel pattern for its modular aluminum panel system, Woven Metal, design number 601. 800/786-4243. Gage Corporation, Sparta, Wis. **CIRCLE 235**

Boards made of straw

ISOBORD is a fiberboard composed of straw fibers and nontoxic resins, making the material at least 10 percent lighter than traditional engineered board and more environmentally friendly. The straw is a waste product that would otherwise be incinerated. Panels come in standard lengths and widths; custom sizing is available, as is a fire-retardant option. 503/242-7345. Isobord, Portland, Ore. **CIRCLE 236**

Copper-based wood treatment

To mitigate possible environmental damage, Preserve treated wood products are coated with a copper-based preservative, instead of the commonly used chromium and arsenic treatment. Biodegradable preservatives offer additional protection from fungi and insect attack that copper alone would not control. 704/522-0825. Chemical Specialties, Charlotte. **CIRCLE 237**

Both translucent and 3-D

The 21 patterns of the Diafos series of translucent laminate material feature 3-D decorations. Each sheet is 51 by 120 inches, and when coupled with phenolic backing, the laminate can be used for desktops and other horizontal applications. 800/228-2238. Abet Laminati, Englewood, N.J. **CIRCLE 238**

Laminate design collection

An inexpensive alternative to custom laminate designs, the Wilsonart Graphic Standards Collection offers 30 predesigned laminate patterns, 12 silk screened, and 18 digitally printed, on 4-by-8-foot sheets. 800/433-3222. Wilsonart, Temple, Tex. **CIRCLE 239**

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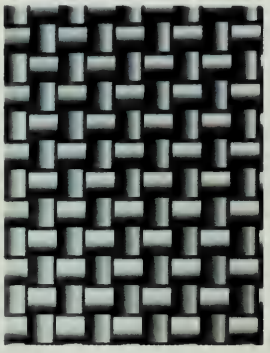

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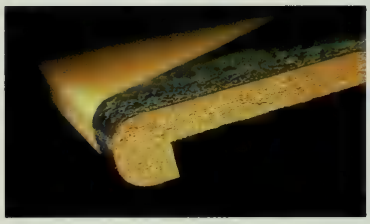

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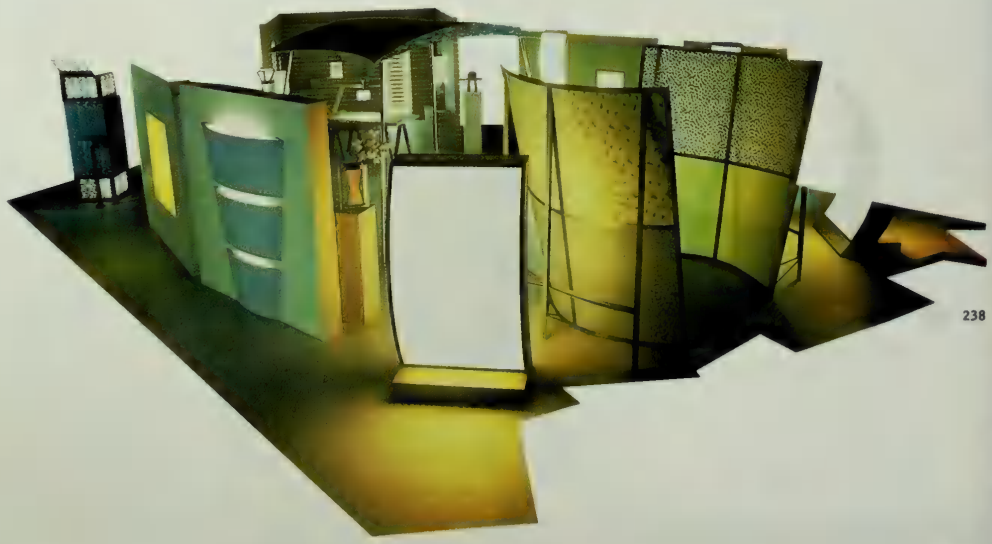

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THE CHALLENGE

Create a new generation coating alloy which will outperform the much heralded Follansbee metal roofing products Terne and TCS; meet and exceed all performance and environmental criteria anticipated for the next century; maintain price

THE PLAN

Engage a top team of metallurgical and chemical engineers to develop and independently test hundreds of alloys both in the laboratory and through natural exposure to all conceivable atmospheres

THE OUTCOME:

After seven years of rigorous testing, Follansbee creates a patented ZT® Alloy. Applied to both stainless steel and prime carbon steel, it exceeds all anticipated objectives.

THE RESULT:

Announcing a new generation of Follansbee roofing metals which will meet your highest performance and environmental requirements. We are proud to offer these products under the trade names:

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CIRCLE 57 ON INQUIRY CARD

Pinehurst Resort & Country Club
Centennial Course No. 8
Owner: Club Corporation of America
Architect: James R. McVicker Jr. AIA

Roofing Contractor: McRae Roofing Inc
Color: Hemlock Green
Profile: Snap-Clad.

*Not to mention the blues, reds and 30 other standard colors on steel. (18 on aluminum)

SNAP-CLAD™
Metal Roofing Panels

Pinehurst Resort & Country Club recently completed its new clubhouse for its Centennial Course No. 8. The clubhouse, designed by architect James R. McVicker, evokes the rich tradition of Pinehurst and its position at the top of a hill makes it visible from all corners of the course. The project features over 9,000 sq. ft. of Snap-Clad panels with a Hemlock Green PAC-CLAD finish. McRae Roofing Company of Asheboro, North Carolina installed the panels.

Petersen Snap-Clad Panels are corrective leveled as they are roll-formed, allowing us to provide panels of unmatched flatness. PAC-CLAD is a full Kynar 500® finish covered by a non-prorated 20 year warranty. For complete information, please contact Petersen Aluminum Corporation at 1-800-PAC-CLAD or visit us on the web @ www.pac-clad.com.

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CIRCLE 58 ON INQUIRY CARD

THERMAL & MOISTURE PROTECTION

Roof accessories • Insulation & finish systems • Siding

When our judges observe more and more designers turning to a specific product in the field, they consider this an endorsement in itself. Which is one fundamental reason why they selected the CENTRIA Formawall line. Also, they noted that several products solved roofing problems and offered retrofit solutions, such as easy-to-install insulation.

SOME OF THESE PRODUCTS SHOW A REAL ACKNOWLEDGEMENT OF THE REMODELING OR RECONSTRUCTION MARKETS.

—Mark Kalin

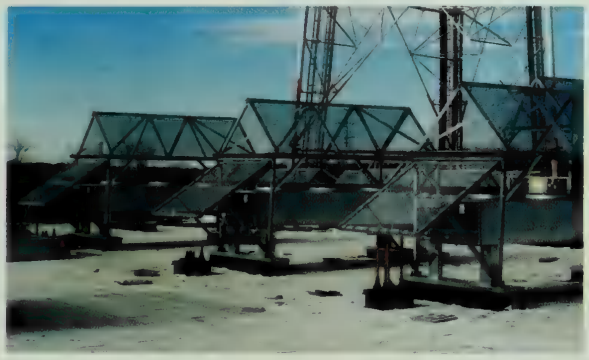
Protection for roof units
The RPI Ice Deflector protects HVAC equipment, piping, or anything else on the roof exposed to winter's hazards. 800/262-6669. Roof Products Inc., Chattanooga. **CIRCLE 240**

Simple insulation retrofit
Retrofitting reflective bubble insulation for metal buildings is made easier by Fi-Foil's Retro Shield System, which uses simple clip and pin components. 800/448-3401. Fi-Foil Company, Auburndale, Fla. **CIRCLE 241**

Self-ventilating metal panels
Each panel in a Europanel metal rainscreen system is self-ventilating, with no gaskets or sealants. 801/323-9993. Pohl of America, Salt Lake City. **CIRCLE 242**

More choices for panel system
The Formawall Dimension series adds design flexibility to the Formawall line of foamed metal-panel systems. New panel options include variable reveals, thicknesses, and profiles, as well as a range of finishes and colors. 800/759-7474. CENTRIA, Moon Township, Pa. **CIRCLE 243**

Durable roof metals
Follansbee Steel has introduced two new roofing metals: TCS II, composed of architectural stainless steel, and TERNE II, composed of prime, carbon steel. Both are coated with the company's new zinc and tin alloy and have low coefficients of expansion, and neither is degraded by exposure to the sun. 800/624-6906. Follansbee Steel, Follansbee, W.Va. **CIRCLE 244**



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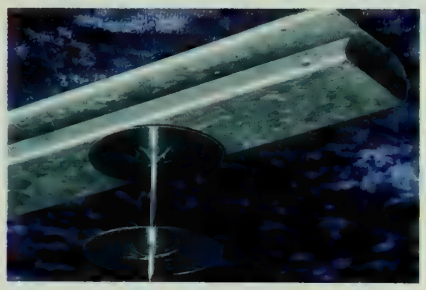

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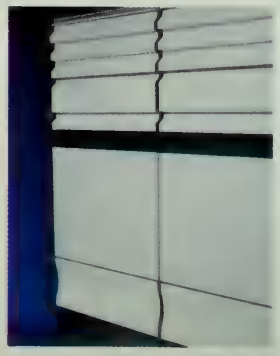

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Superior Light Diffusion In A Maintenance-Free Glass Package.

Okalux® Insulating Glass Panels.

OKALUX® insulating translucent glass panels permit evenly diffused illumination and provide improved thermal insulation.

OKASOLAR® insulating glass panels contain a custom-designed fixed-louver system and are engineered for the specific orientation of each glazing.

OKALUX® Light Diffusing and Insulating Glass panels provide high-quality, non-yellowing, natural illumination. Light transmission can be adjusted to the requirements of most projects. OKALUX® Light Diffusing and Insulating Glass panels have withstood the test of time and have been used in applications worldwide for schools and universities; museums and libraries; municipal, commercial and industrial buildings such as offices and sports complexes; shopping malls; airports and atriums. Also ask us about OKASOLAR® sun control panels with fixed integrated louvers for optimum light and heat control. For more information contact SCHOTT Corporation, 3 Odell Plaza, Yonkers, NY 10701, or call (914) 378-3839. And also visit our website at www.schottglass.com/okalux.htm.

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CIRCLE 59 ON INQUIRY CARD

SCHOTT
glass made of ideas

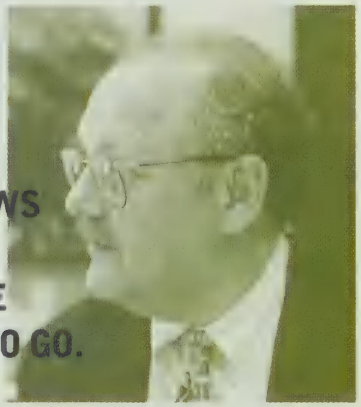
DOORS & WINDOWS

Wood and plastic doors and frames • Metal windows • Glass • Glazed curtain walls • Automatic entrance doors

One panel member considered glass the most encouraging product category overall, because instead of imitating another material, its natural properties and texture possibilities are emphasized. Another judge felt that too few solar-energy products were submitted and advised that architects raise their awareness of this category.

A LOT OF THE FINISHES, DOORS, AND WINDOWS WERE LOW MAINTENANCE. THEY COME FROM THE FACTORY ALMOST READY TO GO.

—Mark Kalin



Copper-clad window frames
Willmar's Real Copper Clad windows will age with time but come in two prepatina finishes—hand rubbed and speckled—for those who want a head start. The interior of the window frames is Pacific Coast hemlock. 877/533-2094. Willmar Windows, part of the JELD-WEN family, Winnipeg, Manitoba. CIRCLE 245

Glass below your feet
Joel Berman Glass Studios fabricates kiln-cast textured-glass panels for use as stair treads. Transparent, translucent, and opaque varieties are available in more than 2,000 colors. Panel sizes reach up to 54 by 108 inches. 888/505-4527. Joel Berman Glass Studios Ltd., Granville Island, Vancouver, British Columbia. CIRCLE 246

Blue moods
Arctic Blue is a blue-tinted float glass designed to achieve high daylight transmittance while maintaining good solar control. A reflective alternative, Arctic Blue Eclipse, also achieves low UV transmittance and glare control. 419/246-6078. Pilkington LOF, Toledo, Ohio. CIRCLE 247

Profiled glass system
The Profilit profiled glass system incorporates translucent, cast glass, and minimal aluminum framing. The elongated "U" shape of the glass panels give them structural strength, allowing the self-supporting system to be installed at high elevations or over long lengths without the need for extra vertical or horizontal mullions. 910/579-4441. Pilkington LOF, Toledo, Ohio. CIRCLE 248

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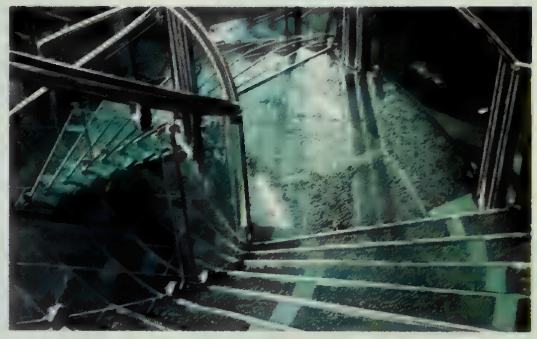

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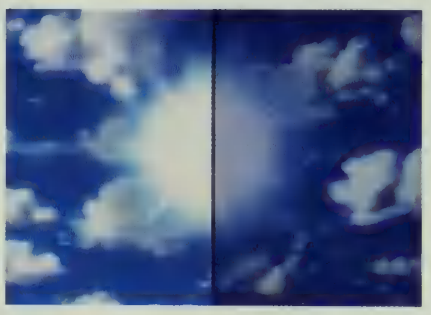

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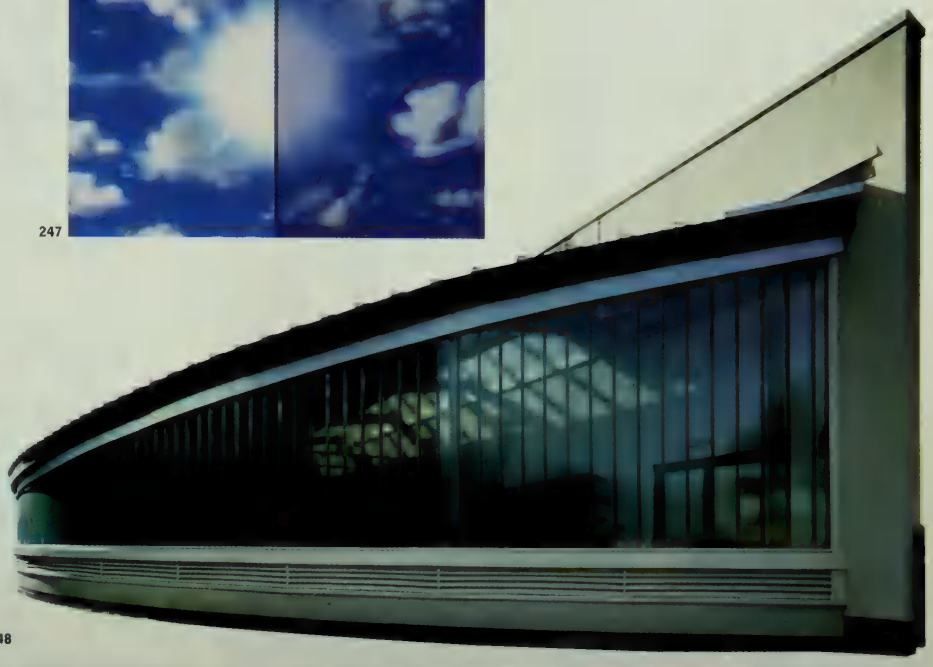

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DOORS & WINDOWS

Wood and plastic doors and frames • Metal windows • Glass • Glazed curtain walls • Automatic entrance doors

PRODUCTS

Strong and stable door core

TimberStrand LSL, a structural composite lumber door core, is stronger than a stave lumber core with respect to screw-holding and -bending properties while featuring the engineered stability of a particleboard core. 800/423-5808. Trus Joist MacMillan, Boise, Idaho. CIRCLE 249

Sleeker automatic door

The DORMA ES-A automatic sliding door features a 4½-inch header designed to blend with standard storefront profiles. 877/367-6211. DORMA Automatics, Upper Marlboro, Md.

CIRCLE 250

Heavy-duty door hardware

L.E. Johnson has introduced its Series 200 line of heavy-duty door hardware. The 200SD hangers for sliding doors feature built-in height adjustment and can carry door weights up to 300 pounds. The 200FD system can carry folding doors weighing up to 125 pounds. 800/837-5664. L.E. Johnson Products Inc., Elkhart, Ind. CIRCLE 251

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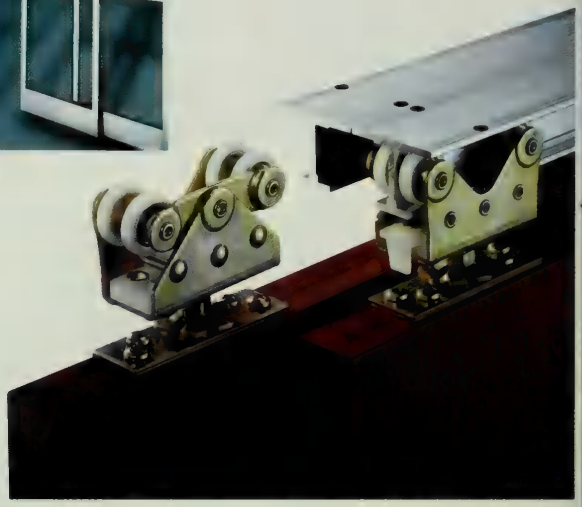

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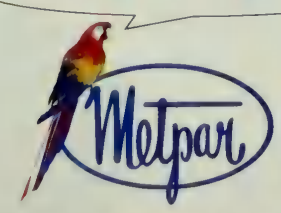
Metpar's POLLY™ SOLID PLASTIC Toilet Partitions

METPAR'S TOUGH
DESIGN STANDARD
COME STANDARD

Sorry Gremlins… Metpar's toilet partitions' full h brackets, integral hinges and attractive gapless des not only tough - they're standard - so they're as ea afford as they are to maintain.

"Better go look for an easier target, gu



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Free catalog or CD for specs and details: METPAR CORP., 95 State St., Westbury (516) 333-2600 • Fax: (516) 333-2618 • E-Mail: sales@metpar.co

Leader in toilet, dressing & shower enclosures since 1950

20-minute fire-rated wood door
Eggers offers the 20-minute fire-rated True Divided Lite wood door in flush and stile-and-rail versions. 920/722-6444. Eggers Industries Inc., Neenah, Wis. CIRCLE 252

Quick-to-test chain hoist
For easier fire testing, the Fireset 3 fire door chain hoist allows the door to drop during testing without releasing spring tension. 800/959-9559. Atlas Door, division of Clopay Building Products, Cincinnati. CIRCLE 253

Low-profile exit device
Impact recessed exit devices for doors extend only 1.25 inches from the door surface, facilitating compliance with clear-width requirements for cross-corridor doors. 317/613-8944. Von Duprin, Indianapolis. CIRCLE 254

Choices in glass doors
Apart from custom options, Surface+ tempered-glass doors are available in one of four standard patterns. Available in steel, aluminum, and bronze, rails have square or beveled-edge details. 877/626-7788. Surfaces+, a Forms + Surfaces Company, Carpinteria, Calif.
CIRCLE 255

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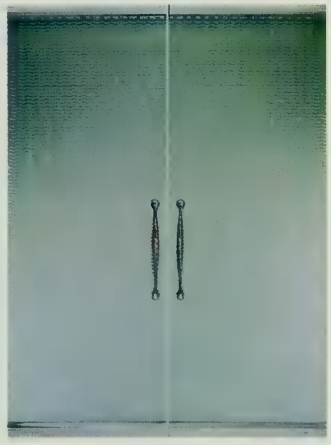

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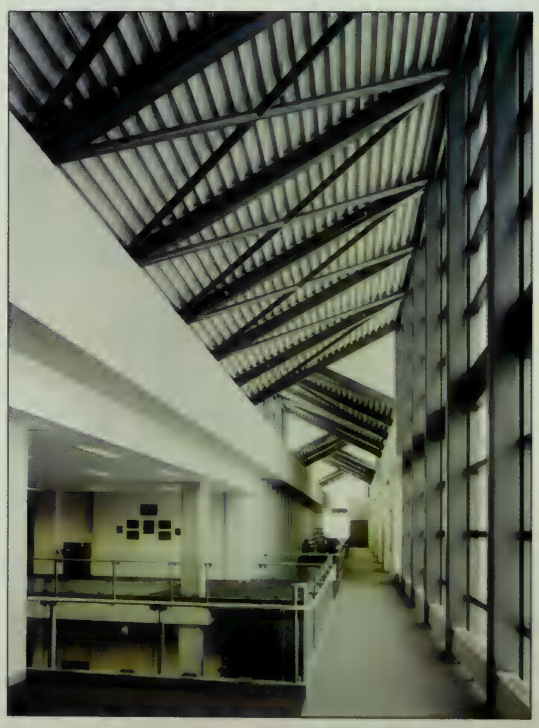

Photo: MacAlester College, St. Paul, MN
Architect: Holabird & Root
Photo By: Steven Bergerson Photography, Minneapolis
A/D FIREFILM® on structural steel

CIRCLE 61 ON INQUIRY CARD

DOORS & WINDOWS

Wood and plastic doors and frames • Metal windows • Glass • Glazed curtain walls • Automatic entrance doors

Custom glass everywhere

Nathan Allan custom-designed cast-glass meets all safety codes for tempered glass. The studio has created a range of glass furnishings, from partitions and glass tops to sinks and railings. 604/277-8533. Nathan Allan Glass Studios Inc., Richmond, British Columbia.

CIRCLE 256

Translucent curtain wall

Skywall's SW-250 translucent curtain-wall system offers clean, two-and-a-half-inch sightlines with no exposed fasteners. The system also eases the transition between translucent panels and glass. Optional faces are available, including radiused and special profiles. 800/259-7941. Skywall Translucent Systems, Terrell, Tex.

CIRCLE 257

Structural, operable windows

Skyline structurally glazed Tilt-n-Turn windows may be operable, but they preserve an all-glass appearance. 212/491-5630. Skyline Windows, New York City. CIRCLE 258

256

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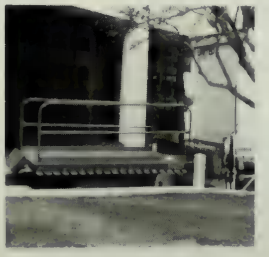

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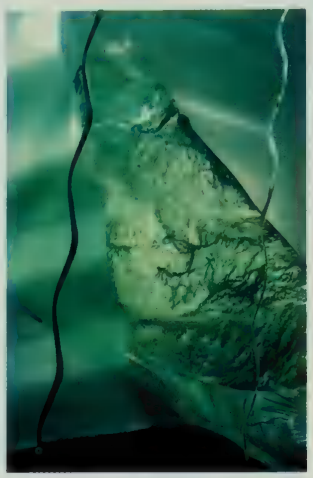
Corrugated translucent glass
WaveLite glass comes in four standard translucent colors and in any thickness up to one-half inch. Its corrugated configuration gives it greater strength. 310/202-6001. Glasstech, Los Angeles. CIRCLE 259

From paper to glass
Architectural Glass Design transforms drawings into colored-glass panels. 707/255-5954. Architectural Glass Design Inc., Napa, Calif. CIRCLE 260

Curtain-wall variety
Wausau Window's selection of curtain walls is vast. The exterior frame of structurally glazed Series 6750 FlexWall is unexposed. Series 6250 SuperWall and SlopeWall are energy efficient. SuperWall spans from floor to floor. 877/678-2983. Wausau Window and Wall Systems, Wausau, Wis. CIRCLE 261

Highly insulating glass
Superglass Quad insulating glass features an insulation value from R-10 to R-12.5, the highest of any standard glass available in the U.S. 650/962-9111. Southwall Technologies, Palo Alto, Calif. CIRCLE 262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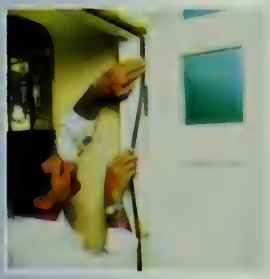

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CIRCLE 64 ON INQUIRY CARD

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Like Gaudí, the ceramic tile manufacturers of Spain are legendary in their industry. True artisans, for more than eight centuries they have proudly combined a rich history of craftsmanship and quality with forward-thinking technologies and innovations.

From ancient methods to the state-of-the-art technologies used today, the tile manufacturers of Spain have remained at the forefront of the industry. Their masterful understanding of traditional concepts and modern innovations continues to develop the techniques and products of the future.

No other ceramic tile in the world combines the "cachet" of the finest European products with such attractive price points. Tile of Spain delivers style, quality, and a gorgeous array of elegant designs, rich textures and brilliant colors, priced to enhance competitive ability and profitability.

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CIRCLE 65 ON INQUIRY CARD

Gaudí

TILE OF SPAIN

FINISHES

Special flooring • Tile • Acoustical treatment • Wall coverings • Gypsum fabrications • Painting materials

The finishes that received the most attention are considered by their manufacturers to be green in some way (such as those that used postconsumer waste). Our judges found that very encouraging. They also saw a nostalgic trend in some of the designs, with products having a strong tendency toward looks of the past, be they from 1700, 1900, or 1950.

I FOUND MYSELF RESPONDING TO THINGS THAT HAVE REFLECTIVE QUALITIES THAT CREATE LUMINOSITY AND DEPTH. —*Margaret Helfand*

Hardwood floor medallions
Oshkosh hardwood floor medallions come in 52 stock designs or can be custom ordered. 800/222-1068. Hoboken Floors, Wayne, N.J. CIRCLE 263

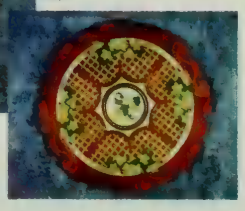
High-res images for tiles
Two new images, Citrus and Pacific Blue, have been added to Imagine's line of ceramic tile. Imagine's vivid, high-resolution graphics on tile is a process in which ceramic glazes are applied like printing inks. 800/680-8453. Imagine Tile, Jersey City, N.J. CIRCLE 264

Italian marble mosaics
The Pietre Romane line of antiqued marble mosaics are satin finished with rounded edges. 212/829-8341. Sicis USA Inc., New York City. CIRCLE 265

Woven fiberglass for walls
Textra is a woven fiberglass wall-finish system available in 12 textures and many colors. The material facilitates natural moisture-vapor diffusion. 800/654-3103. Johns Manville, Denver. CIRCLE 266

Designer sound treatment
The Eurospan wide-span acoustical treatment has the look of painted gypsum board, but recreates the softer look of a fabric ceiling. 800/359-3312. Wall Technology Inc., Broomfield, Colo. CIRCLE 267

Glass mosaic tiles
Bisazza has added a new style, Metron, to its collection of terrazzolike glass mosaic tiles, which are lighter, thinner, and more flexible than conventional terrazzo. 212/463-0624. Bisazza, New York City. CIRCLE 268



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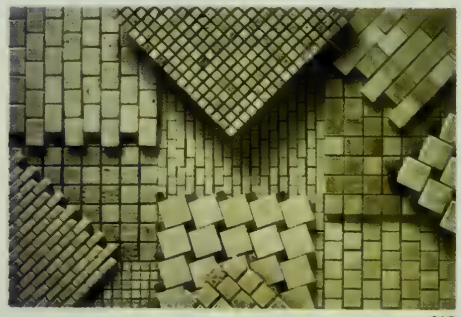

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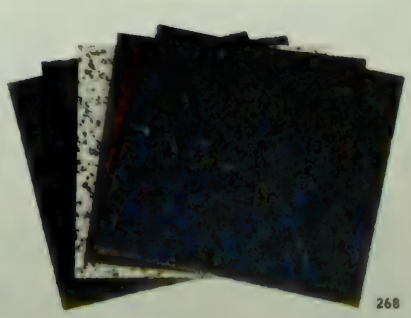

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FINISHES

Special flooring • Tile • Acoustical treatment • Wall coverings • Gypsum fabrications • Painting materials

Green carpet backing

Using the AdBac composite backing system in the fabrication of carpets makes carpets more than 25 percent lighter. Because the material is thermoplastic, the carpet can be recycled at the end of its use. 800/872-0765. Amoco Fabrics and Fibers Co., Dalton, Ga.

CIRCLE 269

Custom puzzle-piece floors

Architectural Shapes & Colors custom manufactures tile in interlocking shapes of the architect's making. 877/497-4273. Architectural Shapes & Colors, Canton, Ohio. CIRCLE 270

Carpets and corporate image

Milliken has launched Image Forum, an educational program that shows designers how to use Millitron Imaging technology to integrate corporate imaging and branding into custom-made carpets. 800/241-4826 x8433. Milliken Carpet, Commercial Markets, LaGrange, Ga. CIRCLE 271

New linoleum line

Forbo has expanded its Artoleum line of linoleum with Artoleum 2, a collection of 57 new colors in 4 different patterns. 800/842-7839. Forbo Industries Inc., Hazelton, Pa. CIRCLE 272

Tiles with natural fibers

The tiles in the Madera line are made of a bio-alloy material and recycled natural fibers such as postconsumer maple hardwood. The tiles are lighter than natural stones and ceramics, yet quite strong and durable. 800/465-4605. Matrix Composites, Mississauga, Ontario.

CIRCLE 273

Cement icing

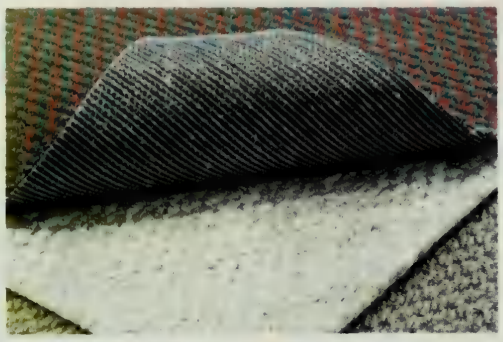
Micro-Top is a paper-thin cementitious medium that can be troweled onto the horizontal or vertical surfaces of concrete, metal, wood, plastic, or asphalt to add color impression or to create a logo. 559/673-2411. Bomanite Corp., Madera, Calif.

CIRCLE 274

Authentic antique terra-cotta

Ann Sacks offers antique French terra-cotta. The material is rare, and its condition varies. Colors vary from light ochre to deep cordovan. 800/278-8453. Ann Sacks, Portland, Ore.

CIRCLE 275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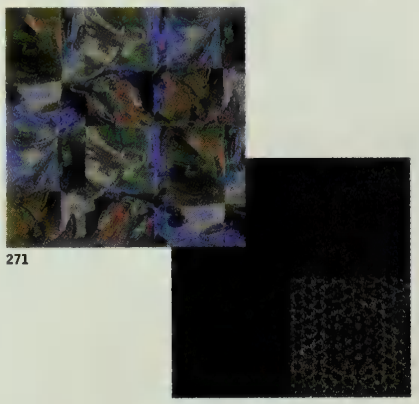
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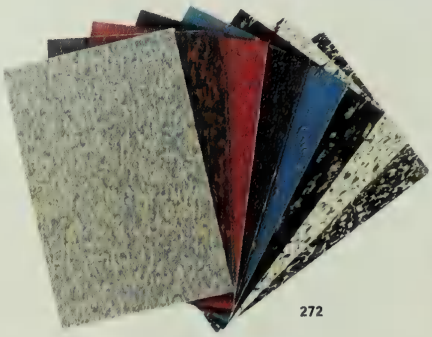
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FINISHES

Special flooring • Tile • Acoustical treatment • Wall coverings • Gypsum fabrications • Painting materials

Tough wallboard

Gold Bond Fire-Shield Type X Hi-Abuse wallboard, designed for use in high-traffic areas like classrooms, corridors, and dormitories, is highly resistant to surface abrasion and indentation. 800/NATIONAL. National Gypsum Company, Charlotte. CIRCLE 276

Large slabs of terra-cotta

Cottostone combines the qualities of quartz-based materials and terra-cotta, allowing slabs to reach sizes up to 120 by 300 centimeters. 212/758-2593. Sannini Impruneta, New York City. CIRCLE 277

Faux stones

Questech Stone is a lightweight cast stone manufactured to look natural and aged. Each stone is individually finished to ensure variations from piece to piece. 802/388-4567. Questech, Middlebury, Vt. CIRCLE 278

Glass tiles with depth

Primarily for wall surfaces, and suitable for backsplashes and fireplaces, Northwest tiles are ¼-inch clear glass, painted on the back in colors inspired by the Pacific Northwest. 800/278-8453. Ann Sacks, Portland, Ore. CIRCLE 279

Colors of old

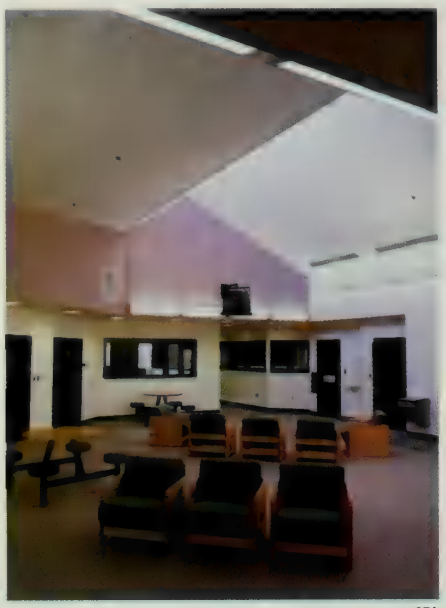
The 149 historically correct colors of the Historic Colors of America paint collection were conceived with the research assistance of the Society for the Preservation of New England Antiquities. Paints are available for both interiors and exteriors. 800/225-1141. California Paints, Cambridge, Mass. CIRCLE 280

Flexible cement backerboard

PermaBase Flex is a flexible cement backerboard, the only one on the market with a ½-inch thickness. An alkali-resistant fiber mesh makes the board suitable for use for both interior and exterior curved surfaces. 800/NATIONAL. National Gypsum Co., Charlotte. CIRCLE 281

Eco-sensitive modular tile

One hundred percent recycled carpeting composes the vinyl backing for Powerbond ER3 modular tile. The tiles are designed for commercial and institutional use. 800/248-2878. Collins & Aikman Floorcoverings, Dalton, Ga. CIRCLE 282



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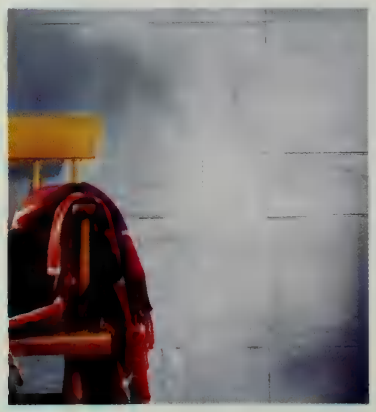

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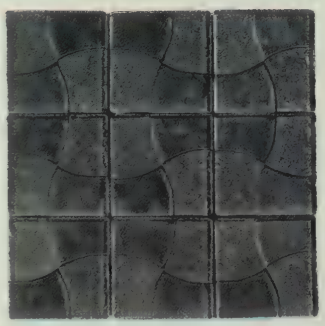

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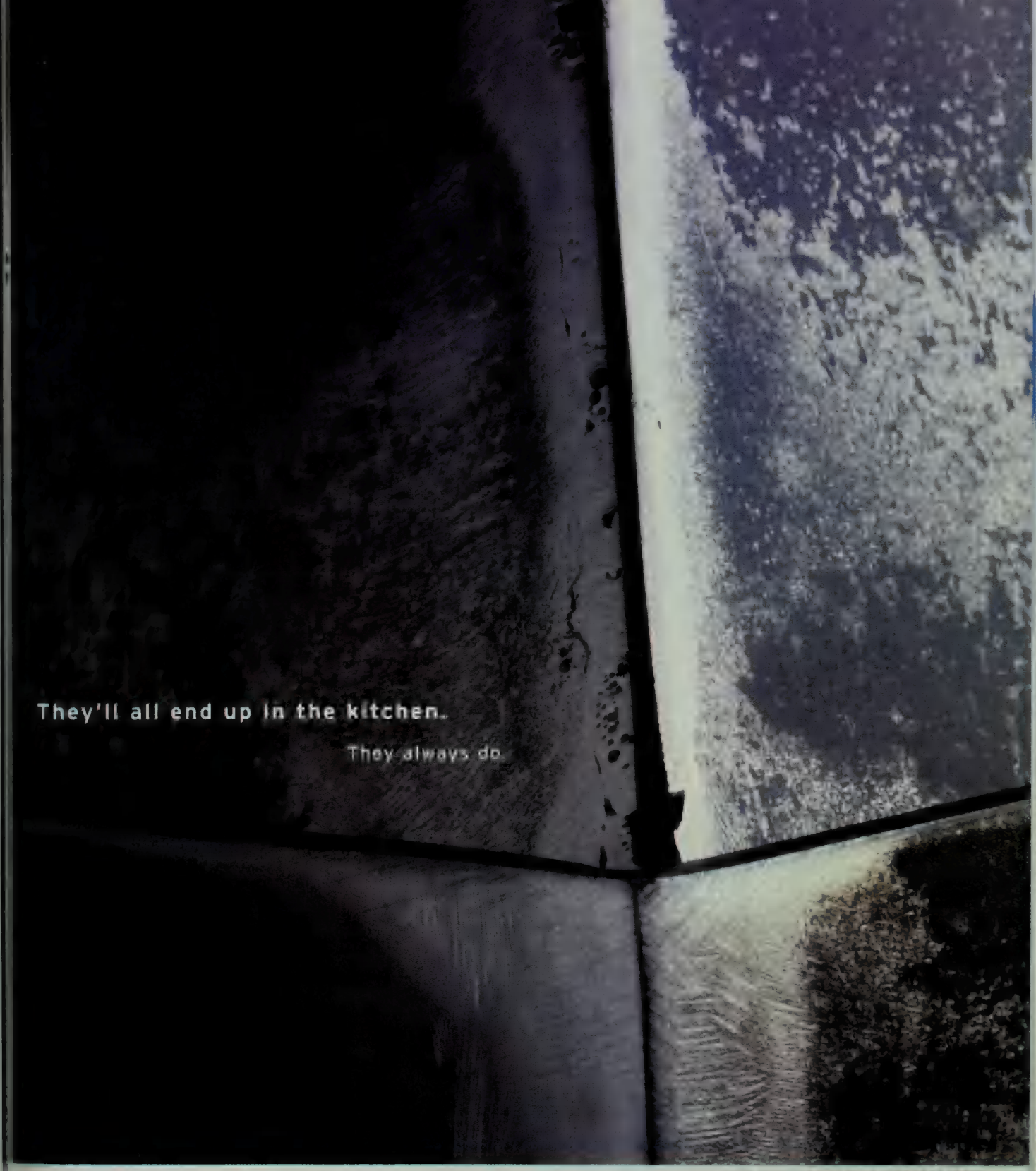

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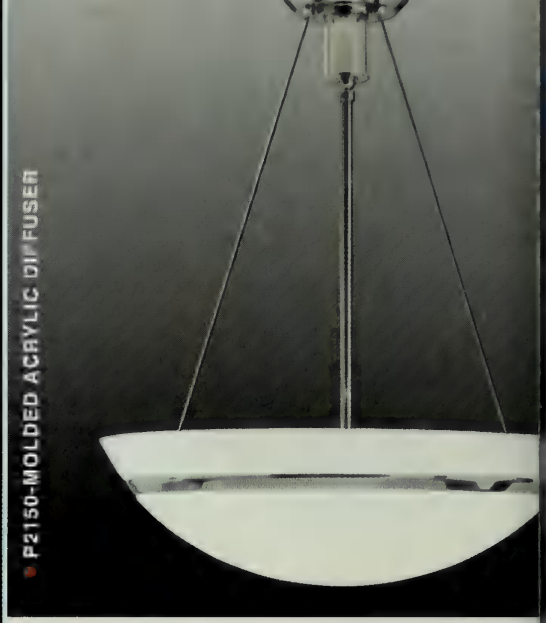

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CIRCLE 68 ON INQUIRY CARD

SPECIALTIES

Wall and corner guards • Grills and screens • Lockers • Operable partitions • Toilet and bath accessories • Signage and graphics

In the specialties category, simple solutions are key, such as an inexpensive fastening system or an easy-to-grasp handrail. The bronze insect screen that was selected allows designers to make a statement with a product that is often invisible. Also, our panel saw an array of exciting new glass shower enclosures.

I THINK PUBLISHING MATERIALS MADE BY SMALLER COMPANIES MAY COMPEL LARGER COMPANIES TO PUSH MORE BOUNDARIES. —Nestor Bolline

Easier-held handrail
The easy-to-grasp Acrovyn leaning rail is designed for those who have trouble with traditional handrails. 800/233-8493. C/S Group, Muncy, Pa. CIRCLE 283

Traditional porch screen
The Phifer bronze screen gives coastal homeowners a more durable alternative to the common fiberglass screen. 800/874-8007. Phifer Wire Products, Tuscaloosa, Ala. CIRCLE 284

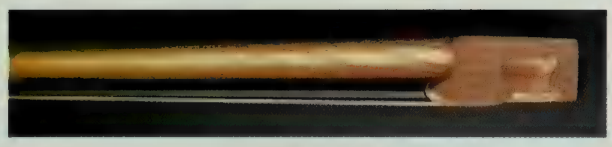
High-style frame systems
Using the latest optical technology, Revelation frames permit elegantly thin signage. 619/621-7257. Visions of Light, San Diego. CIRCLE 285

Simple attachment
The WingIt fastening system allows the mounting of grab bars, hooks, and other bathroom accessories without attachment to studs or blocking. 732/257-6900. WingIt Innovations, South River, N.J. CIRCLE 286

Knock-proof lockers
Lenox Lockers, made of polymer resin, are corrosion-proof, won't absorb odors, and won't fall apart because each locker is one piece. 414/251-6000. Bradley, Menomonee Falls, Wis. CIRCLE 287

Do-it-yourself glass shower
Glass-block shower systems, once only a custom option, are now available as prefabricated, unbuilt packages. 800/624-2120. Pittsburgh Corning, Pittsburgh. CIRCLE 288

Leaves no trace
Glasswall floor-to-ceiling operable partitions forgo the need for floor tracks. Partitions are ½-inch thick. 800/542-2371. Hufcor, Janesville, Wis. CIRCLE 289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CIRCLE 69 ON INQUIRY CARD

EQUIPMENT

Audiovisual equipment • Residential appliances • Athletic equipment • Kitchen cabinets

Kitchen appliances and cabinet systems were the strong winner in this year's equipment category. The Driade Neoz kitchen island challenges the notion that a kitchen must be large and bulky, while the high design of the Sub-Zero wine cabinet can keep bottles inside at different temperatures.

THE NEOZ KITCHEN PRESENTS A CONCEPTUAL CHANGE IN THE APPEARANCE OF KITCHEN FIXTURES AND CASEWORK BY CREATING A SENSE OF TRANSPARENCY. —*Mark Kalin*

Sketch on PDPs
Users of plasma display panels can now mark up presentations by dragging a finger or a stylus across the Matisse, a display overlay. 888/427-6278. Smart Technologies, Calgary, Alberta. CIRCLE 290

A restaurant range at home
It's the same size as a conventional home range and it's self-cleaning. When it comes to cooking, however, the 30-inch-wide VGSC is a professional-grade gas range. 662/455-1200. Viking Range, Greenwood, Miss. CIRCLE 291

Keep one wine cool, one warm
The Sub-Zero 400 series of wine cabinets allows for independent temperature settings for two separate storage compartments. 800/222-7820. Sub-Zero Freezer Co., Madison, Wis. CIRCLE 292

Mobile systems double space
Spacesaver's mobile carriage storage systems are easily customized for storing athletic equipment. 920/563-0728. Spacesaver, Fort Atkinson, Wis. CIRCLE 293

Kitchen hardware as furniture
Driade's Neoz kitchen island is a marble-topped table with built-in sinks, gas range, and waste pipes. 800/494-4358. Luminaire, Chicago. CIRCLE 294

Kitchen that avoids laminate
The System 25 kitchen emphasizes materials close to the elements: stainless steel, aluminum, glass, and wood. 310/288-3875. Bulthaup, Los Angeles. CIRCLE 295

Pininfarina-styled
The IDEA 2000 kitchen is a minimalist update of a system highlighted by handle-free doors and drawers. 877/SNAIDERO. Snaidero, Los Angeles. CIRCLE 296

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OPEN ARCHITECTURE A work environment either liberates or constrains. Platform is possibly the most liberating office furniture system ever designed. Aesthetically outstanding yet ultra-functional, it's the first system to allow for abundant lay-in cabling without post connectors, and the first with an integrated HVAC system for individual climate control at the workstation. Elegant, immensely versatile, and literally a snap to install, Platform is the next generation in office systems. Now. **DESIGN WITH INTELLIGENCE**

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CIRCLE 70 ON INQUIRY CARD

INSCAPE

PLAT

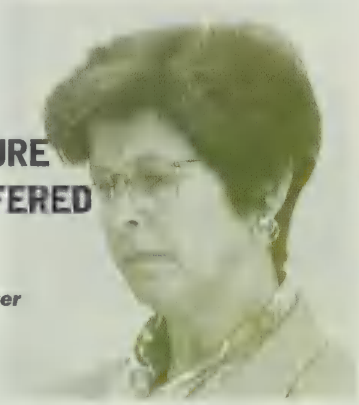
Office

FURNISHINGS

Multiple seating • Office furniture • School/library furniture • Fabric treatments

Our panel selected furnishings that not only exhibited high design, but also kept in mind the way people work. Architects need to specify organized, flexible work environments that offer privacy and interaction, with stylish, yet sturdy materials. Comfort should not be overlooked; one product even allows workers to control the temperature at their workstations.

THE CHILDREN'S FURNITURE SUBMITTED BY GRESSCO OFFERED A SOLUTION I WAS LOOKING FOR. —*Michelle Brewster*



Modular bench
The Kurv modular seating system can be continuously extended, with the option of inserting tempered-glass tables from among several styles between the seating modules. 336/434-0976. AGI, High Point, N.C. CIRCLE 297

Opening the open-plan grid
Open-plan offices tend to become fixed grids of cubicles. The Resolve system opens up the floor plan further to ensure spaces for interaction will never be squeezed out. The secret is that 120-degree corners replace 90-degree corners at the core of the system. 800/851-1196. Herman Miller, Zeeland, Mich. CIRCLE 298

Speak softly
The HT aluminum shelving system is nearly invisible, despite its strength. 800/494-4358. Luminaire, Chicago. CIRCLE 299

Floor cushion as kid's couch
While taking up a lot of floor space, the KinderSystem Cozy Couch makes a more comfortable play area for kids. The frame is polyurethane-coated solid maple, and the cushions come with either vinyl or plush fabric slip covers. 800/345-3480. Gressco, Waunakee, Wis. CIRCLE 300

Screening options
The curved-laminate screens of the Cinus and Cobra screen systems come in maple and birch and with a variety of infill options: perforated wood, perforated metal, frosted plexiglass, and PUR rubber. 800/237-1625. ICF, Valley Cottage, N.Y. CIRCLE 301

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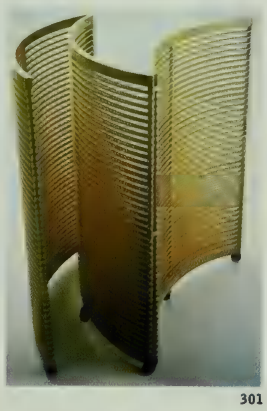

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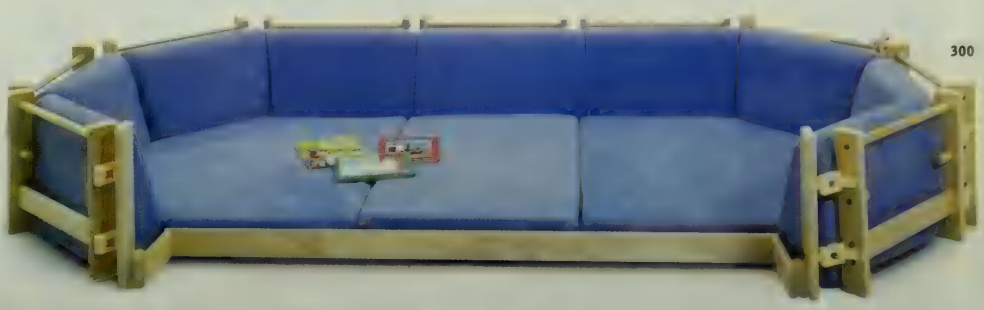

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FURNISHINGS

Multiple seating • Office furniture • School/library furniture • Fabric treatments

Personal control over HVAC

Fitted to a Platform panel spine, the Viaduct overhead raceway delivers heated or cooled air to individual workstations, allowing the worker to control the air temperature. 905/836-7676. Inscape, Holland Landing, Ontario. CIRCLE 302

Wired at lectures

The Concerto with Power and Data is a lecture-hall seating system designed specifically to facilitate the use of laptop computers. Power and data outlets are found below the armrest caps. 800/454-9796. KI, Green Bay, Wis. CIRCLE 303

Table-size adjuster

Tabletop size is easily adjusted with a retractable hand crank in the Adjustable Table Mechanisms line of table supports. Depths can be adjusted between 24 and 36 inches, and widths between 30 and 96 inches. Mechanisms are available for freestanding, slab-end attachment, and corner-return table styles. 800/423-3531. Häfele, Archdale, N.C. CIRCLE 304

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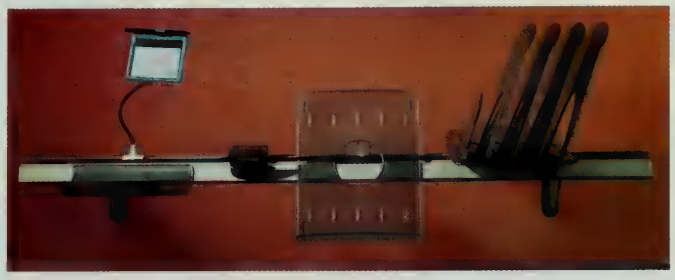
Clearly organized
Jump Stuff translucent desktop tools—trays, shelves, dividers, and boxes—attach to a two-way aluminum rail support that allows both vertical and horizontal placement. 800/344-2600. Haworth, Holland, Mich. CIRCLE 305

Easy-to-change wall dividers
The Altos full-height wall system adds privacy to open-plan layouts. The panels are easily removed and replaced by a variety of different panel styles. 877/835-6466. Teknion, Marlton, N.J. CIRCLE 306

Synthetic fabric, natural feel
Like vinyl upholstery, Force Field synthetic fabric is durable and stain and moisture resistant. Its woven construction lets it to breathe and makes it comfortable. 516/582-3434. Maharam, Hauppauge, N.Y. CIRCLE 307

Out of the cubicle
Another office system that breaks up the conventional open-plan grid, the Flexible WorkSpace encourages nonlinear arrangements through the use of floor-to-ceiling power and data nodes. 800/454-9796. KI, Green Bay, Wis. CIRCLE 308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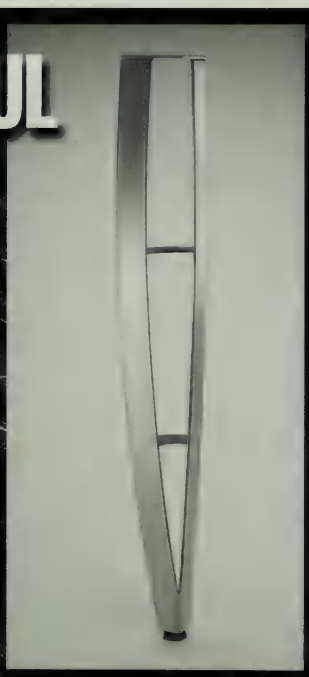

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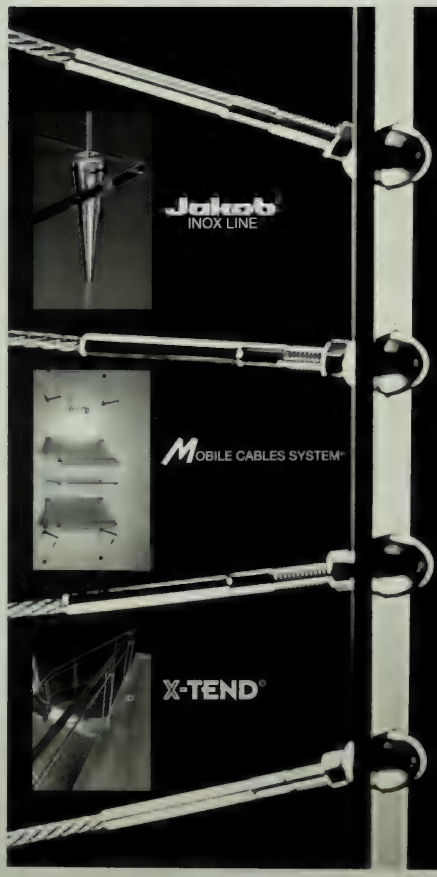
CIRCLE 73 ON INQUIRY CARD



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SPECIAL CONSTRUCTION & CONVEYING SYSTEMS

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When we asked what specific product our panel would like to find on the market, one juror noted he'd like to see electric elevators that go up just one floor. "In a lot of the buildings we are working on there is a need for something less elaborate than a hydraulic elevator," he said. Below are the jury's selection of special construction and conveying systems currently on the market.

MANUFACTURERS ARE DOING MORE RESEARCH THAN EVER, WHICH LETS THEM MOVE NEW THINGS INTO THE MARKETPLACE FASTER. —*Mark Kalin*

Bathroom entertainment
The J-Allure whirlpool bath features a four-speaker stereo system and the option of a cable-ready TV monitor. 800/288-4002. Jacuzzi Whirlpool Bath, Walnut Creek, Calif. CIRCLE 309

Easy accessibility
Much of the Flexi-Lift Limited Use/Limited Application elevator comes prewired and preassembled. 800/925-3100. Access Industries, Grandview, Mo. CIRCLE 310

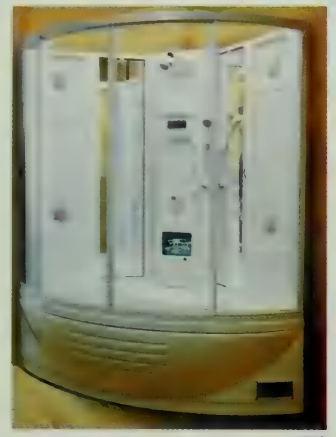
Subtle sound deadener
The 440 Sound Barrier fiberboard sound deadener offers a much thinner profile than the concrete alternative. 800/257-9491. Homasote Co., West Trenton, N.J. CIRCLE 311

A hybrid elevator drive
The Elevette residential elevator's new hybrid drive system combines the reliability of a cable drum lift with the smooth ride of a hydraulic lift. 717/234-8065. Inclinator Co. of America, Harrisburg, Pa. CIRCLE 312

Luxury aquariums
These custom-built aquariums have an architectural flair. 954/970-9511. Living Color Enterprises, Ft. Lauderdale, Fla. CIRCLE 313

Quick modernization
The ACVF Express elevator modernization system for midsize buildings comes prepackaged. 973/397-6500. Schindler Elevator Corp., Morristown, N.J. CIRCLE 314

Almost custom made
The CabForms System of premade panels, handrails, trim pieces, and ceiling give elevators a custom look. 877/626-7788. Surfaces +, Carpinteria, Calif. CIRCLE 315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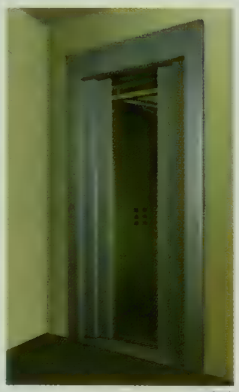
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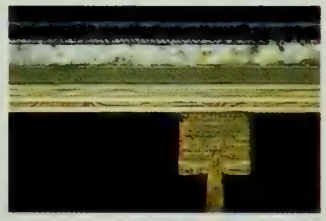
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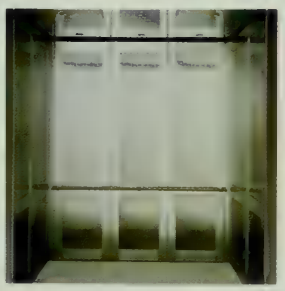
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CIRCLE 75 ON INQUIRY CARD

MECHANICAL

Plumbing fixtures • Water coolers • Air distribution equipment

European styles and stainless-steel finishes marked trends in products selected in the mechanical division. Other products that addressed issues of current interest to our panel included a high-performance pressure-assist flushing system, an accessible water cooler, and a ventilation system that uses textile ducts to eliminate excess noise.

THERE WERE MORE INTERNATIONAL PRODUCTS THAN I'VE EVER SEEN. THE ABUNDANCE OF ENTRIES SHOWS THERE'S A VITAL CONSTRUCTION MARKET. —*Mark Kalin*

Bathe with Graves
Michael Graves has designed a bathroom furnishings line called Dreamscape, which is conceived in the familiarly exuberant Graves idiom. 888/DURAVIT. Duravit, Duluth, Ga. CIRCLE 316

Restyled fixtures
The Madison bridge faucet (shown) is Dornbracht's contemporary revision of a classic fixture. The Meta Tec single-mixer fixtures for toilets, bidets, showers, and tubs are the latest expansion of the Sieger-designed Meta series, taking the series in the direction of matte aluminum. 800/774-1181. Dornbracht, Duluth, Ga. CIRCLE 317

Streamlined toilet
The Metro-Urban toilet, part of Acorn's Neo-Metro collection, is fabricated from heavy type-304 stainless steel and features sleek contours and seamless welded construction. Available options include a high-polish mirror finish and a powder-coated finish. 800/951-9050. Acorn Engineering Co., City of Industry, Calif. CIRCLE 318

A whirlpool-like shower
Imagine the whirlpool concept translated into a shower module. In addition to a showerhead, the fully plumbed Pharo Shower Panel Moonlight directs five water sprays at the body from the knee to the chest level. The unit's body is made of eight-millimeter-thick tempered glass backlit with a stripe of low-voltage diodes. A mixing valve continuously corrects the water temperature and guards against thermal shock. 800/334-0455. Hansgrohe Inc., Cumming, Ga. CIRCLE 319

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MECHANICAL

Plumbing fixtures • Water coolers • Air distribution equipment

Mini kitchen prep room

The PRO TaskCenter introduces a commercial-grade kitchen work area, with either two or three deep basins and a 60-inch span of countertop. 800/4KOHLER. Kohler Co., Kohler, Wis. CIRCLE 320

High-pressure flush system

The Flushmate system consumes only 1.6 gallons of water per flush, but by utilizing water-supply line pressure still cleanses the bowl thoroughly on the first flush. 800/982-5839. Sloan Valve Co., Franklin Park, Ill. CIRCLE 321

Emergency water control

For use with emergency water fixtures, the Navigator EFX Thermostatic Mixing Valve ensures 15 minutes of tepid water, facilitating compliance with new ANSI standards. 414/251-6000. Bradley, Menomonee Falls, Wis. CIRCLE 322

Accessible water coolers

The 19 models in the restyled EZ water cooler series meet ADA accessibility guidelines by reducing the thickness of the upper shroud, allowing plenty of knee clearance for wheelchair-bound users. 630/574-8484. Elkay Manufacturing Co., Oak Brook, Ill. CIRCLE 323

Fabric duct system

The KE-Interior ventilation system resolves traditional problems of air distribution with fabric. Fresh air slowly diffuses through the textile ducts, so there's no draft and very little noise. 877/229-0695. KE Fibertec, Oro Valley, Ariz. CIRCLE 324

Silent, powerful exhaust fan

The SV160 multiport bathroom exhaust system is powerful enough to ventilate large bathrooms—for which there are three ports for three different areas of the bathroom—while remaining very quiet. The casing of the motor is acoustically insulated, and the unit can be remotely mounted. 800/255-7749. American ALDES Ventilation Corp., Sarasota, Fla. CIRCLE 325

Single-minded bathroom line

The advantages of stainless steel are its strength, resistance to corrosion, and longevity. Axor Steel is a bathroom line composed entirely of the material, lightly brushed. 800/334-0455. Hansgrohe Inc., Cumming, Ga. CIRCLE 326

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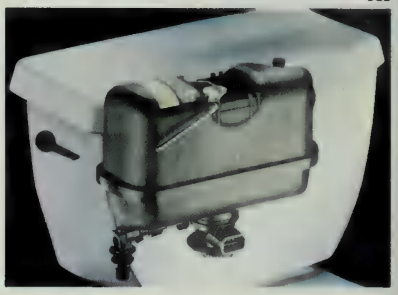
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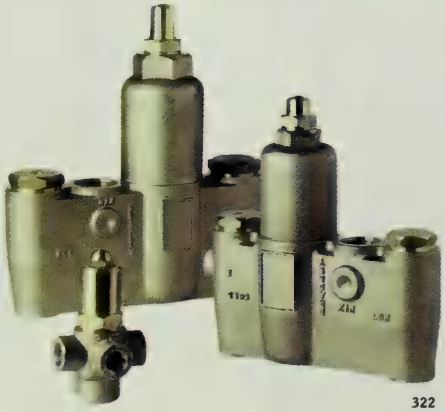
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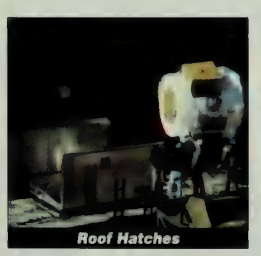
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CIRCLE 77 ON INQUIRY CARD

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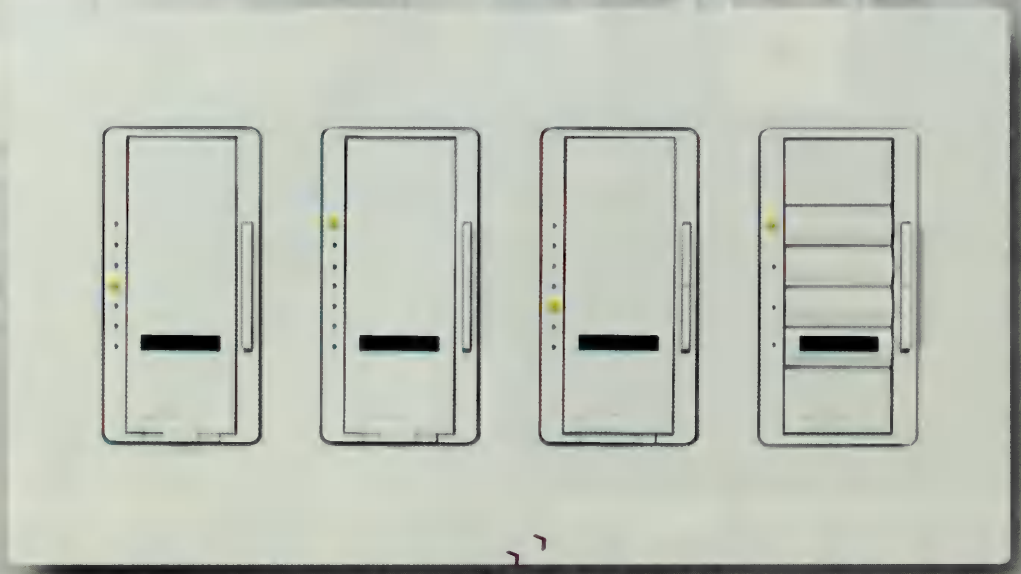

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CIRCLE 78 ON INQUIRY CARD

ELECTRICAL

Interior and exterior luminaires • Fiber optics • Wiring devices • Lighting controls

A wide variety of items were chosen from the electrical category. This was made possible by the fact that more products were submitted in this category than any other. The amount of material available reflects the vast amount of innovation taking place in the areas of lighting, light sources, fiber optics, controls, and wiring devices.

SOME OF THE TINY, WELL-DESIGNED THINGS REALLY PUSH THE LIMITS IN TERMS OF THEIR DIMENSIONS.

—*Margaret Helfand*

Wall-mounted swinger
The A-7001 swings away from its wall mount to put direct halogen light where it's needed. 201/641-1997. Estiluz, Moonachie, N.J. CIRCLE 327

Italian glass sconce
Designer Carlo Forcolini's NAOS sconce for Nemo is suitable for general, indirect, or accent lighting. 203/407-8000. Il America, Hamden, Conn. CIRCLE 328

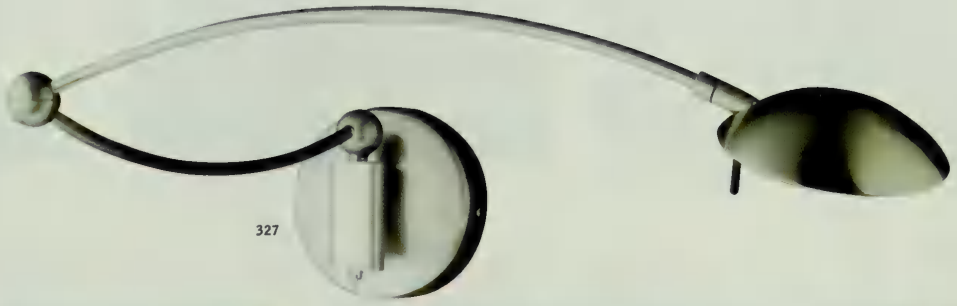
Direct/indirect fluorescent
The Aria uses microprisms to direct light into a batwing distribution for low-glare office lighting. 800/932-0633. Zumtobel Staff, Highland, N.Y. CIRCLE 329

Color-changing LED lamp
The iColor, the world's first digitally controlled lamp, fits in an MR16 socket. The light source is a trio of light-emitting diodes that, using the company's control technology, can produce more than 16.7 million colors. 617/429-9999. Color Kinetics, Boston. CIRCLE 330

Graceful area lighting
The polished-cast aluminum housing of the Canto area light is supported by a curved steel pole. 704/471-2211. Hessamerica, Shelby, N.C. CIRCLE 331

Highbay alternative
The IPS from SPI is a 92 percent optically efficient fluorescent fixture that can be used in place of HID. 414/242-1420. SPI Lighting, Mequion, Wis. CIRCLE 332

LED cove lighting
Another Color Kinetics product, the iColor Cove, uses LED lamps housed in a cove. The cove can change color and produce special effects. 617/429-9999. Color Kinetics, Boston. CIRCLE 333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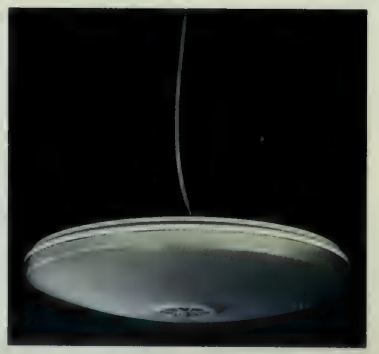
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ELECTRICAL

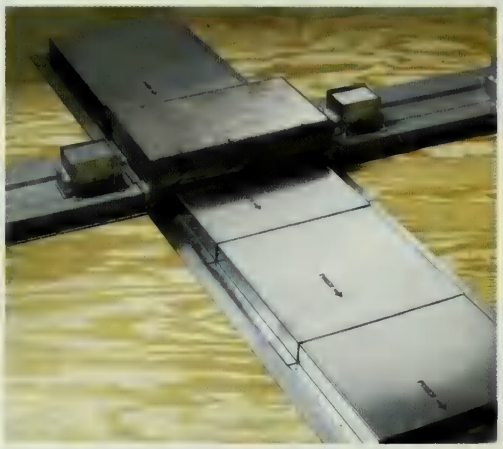
Interior and exterior luminaires • Fiber optics • Wiring devices • Lighting controls

Underfloor electrical ducts
The Steel City underfloor duct system offers great flexibility in the management of data, voice, and power wiring. 800/888-0211. Thomas & Betts Corp., Memphis. CIRCLE 334

Teeny-tiny downlighting
The Pinhole takes a 50-watt MR16 lamp, is aimable, and has an aperture under 2 inches. It can be installed in a nonaccessible ceiling. 210/227-7329. Lucifer Lighting, Austin, Tex. CIRCLE 335

Fiber-optic light bar
The LinearEssence fiber-optic light bar produces light without heat, UV, or IR, making it suitable to display fragile objects. 800/327-7877. Fiberstars, Fremont, Calif. CIRCLE 336

Really flexible remote dimming
Spacer, the remote-control dimmer, is now available with two different hand-held controllers: one sets a favorite scene, the other accesses four preset scenes. 610/282-3800. Lutron, Coopersburg, Penn. CIRCLE 337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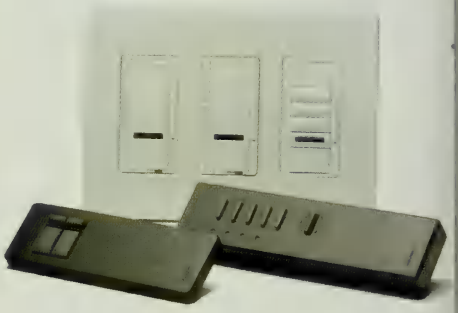
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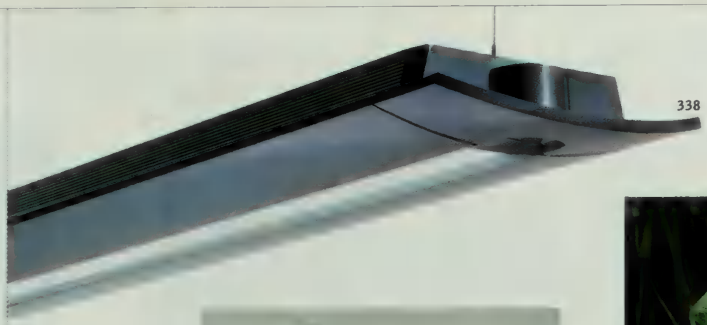
Wall and ceiling luminaire

Italiana Luce's Bridge fixture is ideal where an arc-shape is desired. The arms are polished aluminum, and the transparent glass shade is covered with perforated metal. It takes a 250-watt halogen lamp. 203/407-8000. Il America, Hamden, Conn. CIRCLE 339

The path of least resistance

Kim has introduced the Ravenna line of landscape lighting fixtures. They are weather resistant and either cast aluminum or bronze. The Highlighter is tall enough to stand over ground cover and light walkways, or it can be adjusted to provide uplight. The Lowlighter is similar but of a somewhat lower profile. 626/968-5666. Kim Lighting, City of Industry, Calif. CIRCLE 340



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Recessed fiber-optic fixture
The Eyeball is a tiny, immersible, fiber-optic uplight. It is 2 inches in diameter and adjusts 20 degrees from vertical in all directions. 210/227-7329. Lucifer Lighting, San Antonio. CIRCLE 343

Metal-halide downlight
The T6 metal-halide downlight with a four-inch aperture is the latest addition to the versatile Portfolio Line of downlights. 912/924-8000. Cooper Lighting, Americus, Ga.
CIRCLE 344

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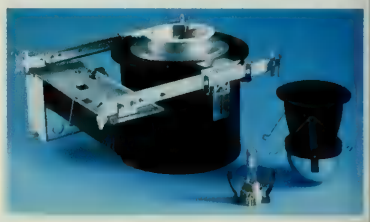
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Suspended glass luminaire

Starfire's Flat-Glass Luminaire provides indirect [illegible] lighting. It is constructed of ½-inch-thick glass and anchored to 1 ½-inch-thick chrome extrusions using brass suspension rods. Glass panels can be clear, sandblasted with patterns, or colored. Light is provided by low-voltage, linear striplights. 800/443-8823. Starfire Lighting, Jersey City, N.J. CIRCLE 346

Workstation luminaire

Steelcase's Canopy attaches to systems' furniture panels. Its patented optics spread light over a wide worksurface area. The luminaire comes in three widths and can be mounted six ways to panels of various heights. 616/698-1405. Steelcase, Caledonia, Mich. CIRCLE 347

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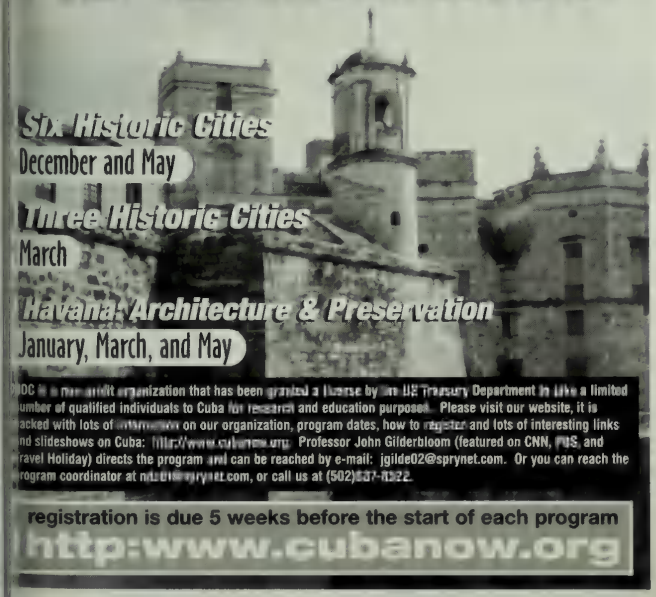

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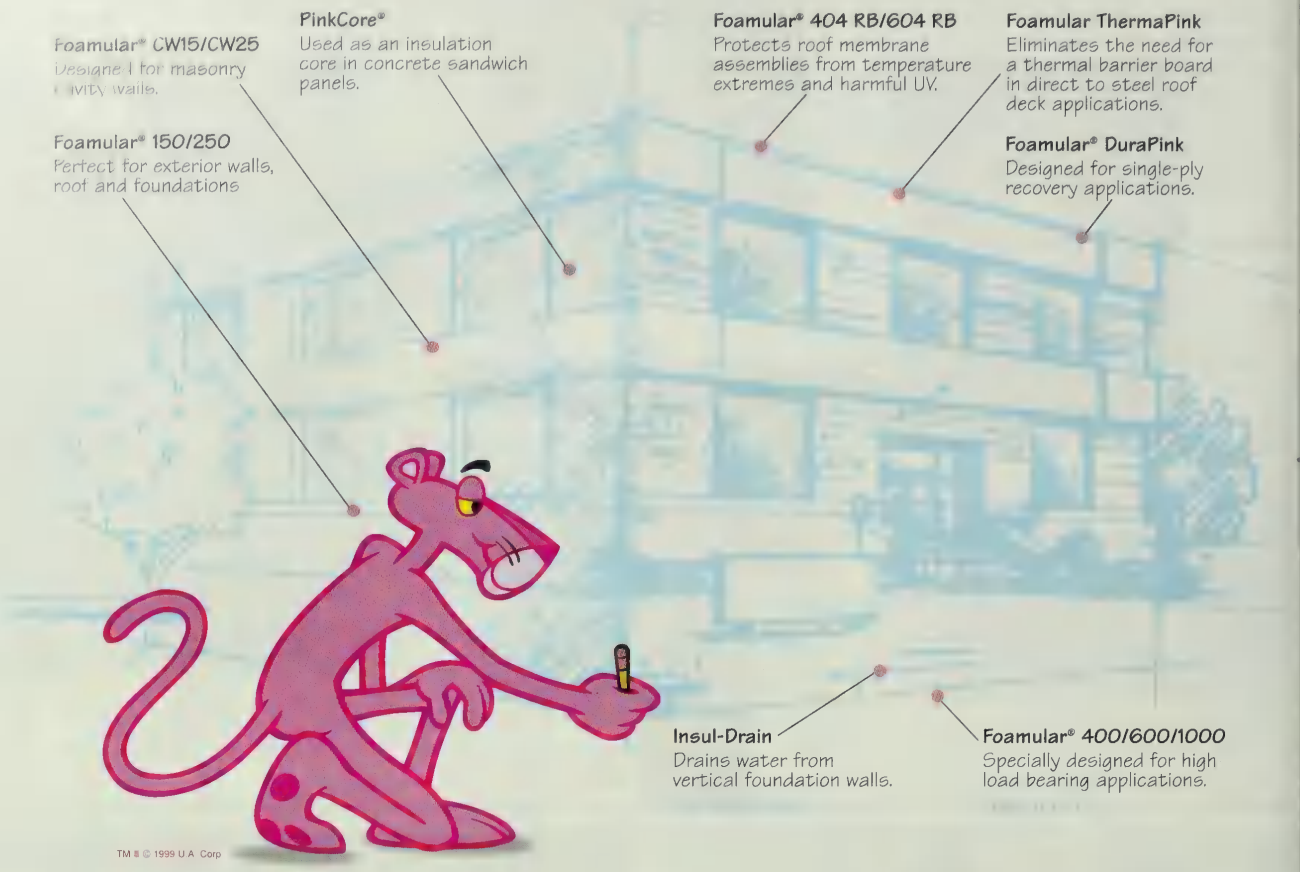

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CIRCLE 85 ON INQUIRY CARD

Giving Back to the Environment

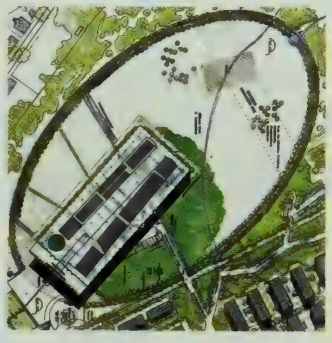
A RADICAL, ENERGY-EFFICIENT GREENHOUSE STRUCTURE THAT ENVELOPS A SMALL, SOLAR-POWERED VILLAGE BECOMES THE NEW CENTER OF AN OLD MINING TOWN.

by Claire Downey and Wendy Talarico

The Mont-Cenis Academy complex is proof that daring design can be generated by ecological solutions—solutions that, despite their technological sophistication, do not make the resulting space feel driven by machinery and computer calculations. The villagelike grouping of buildings that compose the civil service training academy and community center, built on abandoned coal fields in the town of Sodingen (since joined with the adjacent town of Herne), take a holistic approach to energy-conscious architecture. From its transparent facades to the tall pine logs that serve as columns, this boxy, overarching greenhouse structure and the buildings inside seem simple at first view. But Mont-Cenis is a complex project that carries a complex message with implications for the future of the region and of building design in general: architecture in the next millennium will take place not in new construction on virgin land, but in renovating existing buildings or erecting new structures on sullied sites.

The academy is in the Ruhrgebiet, a once mighty industrial region north of the Ruhr River in Germany and home to towns like Duisburg, Essen, and Dortmund. It was Europe's largest industrial region, but economic factors, including a recession in the 1980s, closed its coal mines, steel works, and coke processing plants. The economic devastation was significant, but the pollution was even more destructive to the region. During the processing plants' peak production, acid rain dumped several million tons of sulfur dioxide each year on the soil, some of which was already contaminated by coal sludge and other industrial waste.

The mine at Sodingen, which served as the economic and physical center of town, closed in 1978 and was later razed. In its place, Mont-Cenis, with its surrounding town park, was conceived as a new center that would contain the area's social security offices and a multifunction hall, along with the training academy. The public is free to enter the building, eat in the cafeteria, or use the library. If rooms are available, they can stay the night in the academy hotel.



The Mont-Cenis Academy complex is located at one end of a town park that sits atop an elliptical mound—the earth below is filled with gravel, tailings, and other debris from the mine shafts that surround the site. The complex consists of a glass envelope that houses several buildings, including the area's social security office, library, and civil-service training academy.

The portion of the Ruhrgebiet where Mont-Cenis is located was bucolically rebaptized as Emscher Park about 10 years ago. The region includes 17 cities with a combined population of 2 million people, many of whom are set on forgetting the area's sooty past by investing in a "green" future. With so many old factory sites to be saved, converted, or destroyed, and with a new building program to be defined, the regional government established the International Building Exhibition Emscher Park (IBA) in 1989. Not an exhibition per se, IBA is a land development program like the one formed to organize the reconstruction of Berlin (though Berlin's building program focused on new buildings while the IBA worked predominately with existing structures). The IBA established devel-

CONTINUING EDUCATION

Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To receive credit, turn to page 208 and follow the instructions.

LEARNING OBJECTIVES

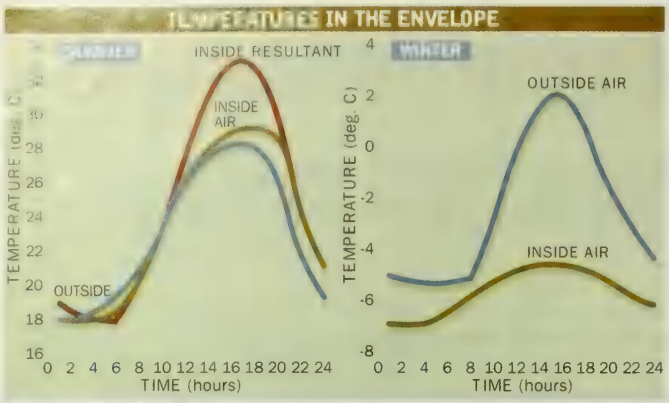
After reading this article, you should be able to:

1. Explain how a mining site was reconstructed to become a village center and training academy.

2. Describe how natural resources are conserved in the Mont-Cenis Academy complex.

3. Describe the advantages of the greenhouse environment over the natural environment.

4. Describe how photovoltaics are incorporated into the project.



SOURCE: OVE ARUP & PARTNERS

In winter and summer, the glass envelope moderates internal temperatures.

opment guidelines emphasizing the use of ecological approaches and new technology in building projects. The thrust of its mission was to renaturalize the landscape, renovate housing sites, clean up polluted rivers and land, and transform major industrial sites into recreational or cultural venues.

The changes in the region within the past 10 years are dramatic. The cities within Emscher Park are now linked by a chain of parks that runs along the Emscher River which, like the Ruhr, was cleaned and stocked with wildlife. Old factories are now galleries and concert halls. The artist Christo recently installed 13,000 painted steel drums inside the empty, 330-foot-high gas storage tank at Oberhausen, west of Herne-Sodingen.

Perhaps the most impressive industrial renovation is the site of a former factory at Zollverein, also to the west. A temple of brick architecture, the central factory building was turned into an industrial design museum by British architect Lord Norman Foster, Hon. FAIA. Here, the latest and slickest industrial products contrast with massive rusted valves and ovens, all still in place. Outside, the public is attracted to the area by exhibition spaces, cafes, and restaurants located among the acres of outbuildings, mine shafts, and pipes that surround the factory.

At a recent gala at Mont-Cenis, the IBA celebrated the conclusion of its 10-year program. Altogether 120 projects were realized, representing an investment of 5 billion DM (about $118 million), two-thirds of this from public money and one-third from private funding. The Mont-Cenis Academy, completed last summer, is the organization's major accomplishment.

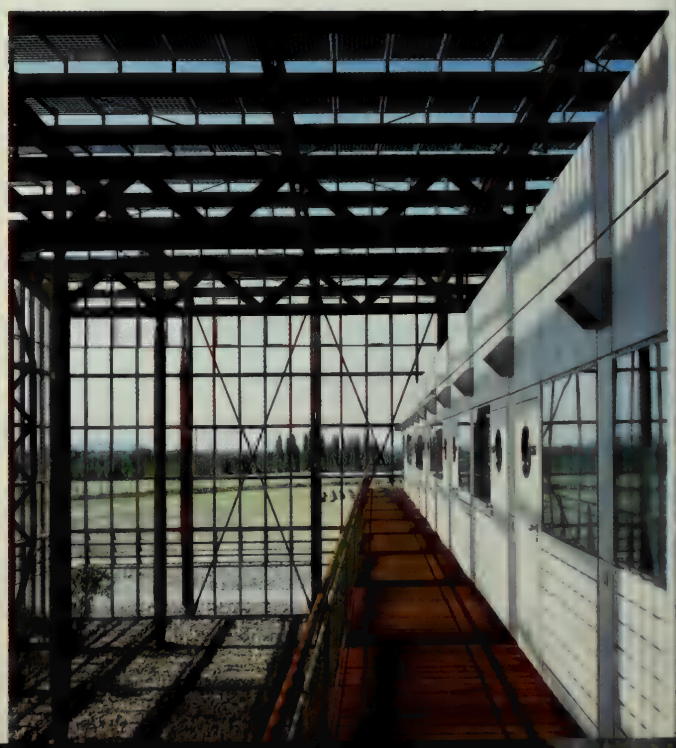
"This wasn't an experimental building," says project architect Françoise-Hélène Jourda. "There is no possibility of risk in architecture." Perhaps the risk lay with the IBA, whose challenge was to take a site scarred with mining shafts that once released toxic gases into the air and convert it into a place that gives back resources and provides spaces in which to live and learn.

The glass envelope

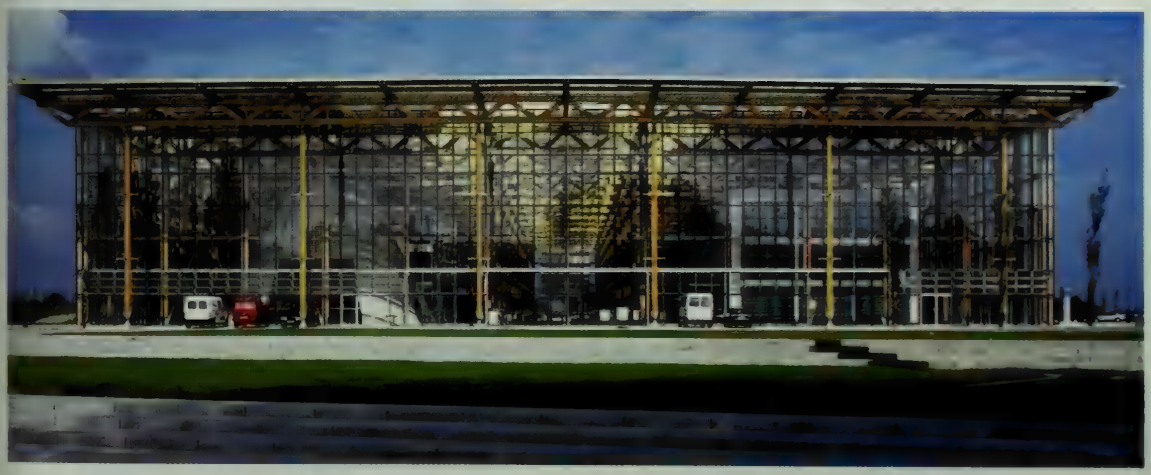
The Mont-Cenis project began with a 1991 competition, won by French architects Jourda & Perraudin (Gilles Perraudin was Jourda's partner). In 1992, the pair joined with German architects Hegger Hegger Schleiff (HHS). Jourda, now with her own Paris firm, describes the combination of talents as a true collaboration: she took the lead on the conceptual design, and Manfred Hegger contributed ideas and knowledge of the region. HHS, a firm that specializes in environmental design, also worked on other Emscher Park projects and oversaw construction on Mont-Cenis.

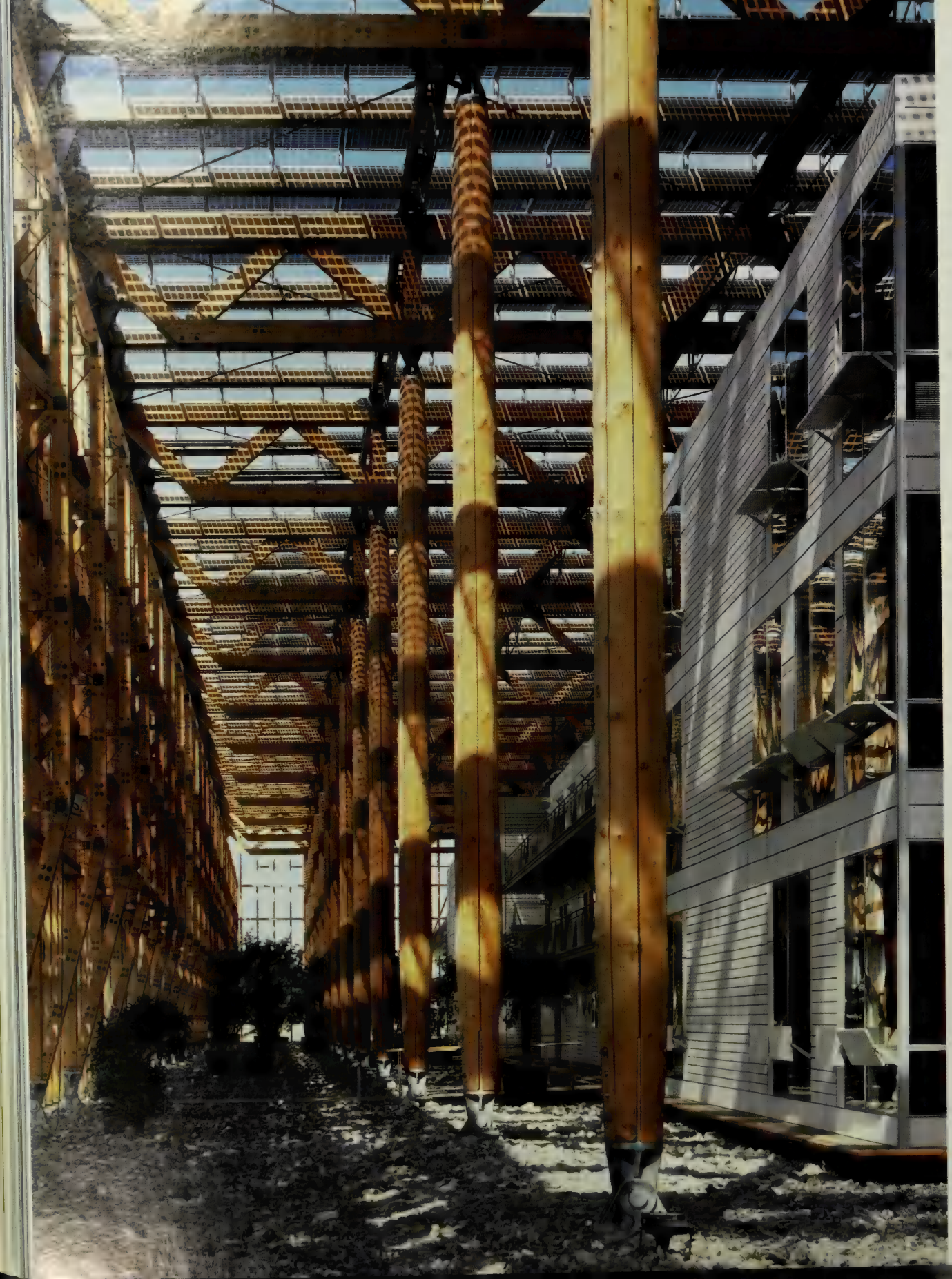
From the first, Jourda was set on using a glass envelope to create a microclimate for the buildings within, a concept she has used on a smaller scale in other projects. But Mont-Cenis marks the first time such an approach has been so thoroughly and so successfully applied in the region, and perhaps internationally.

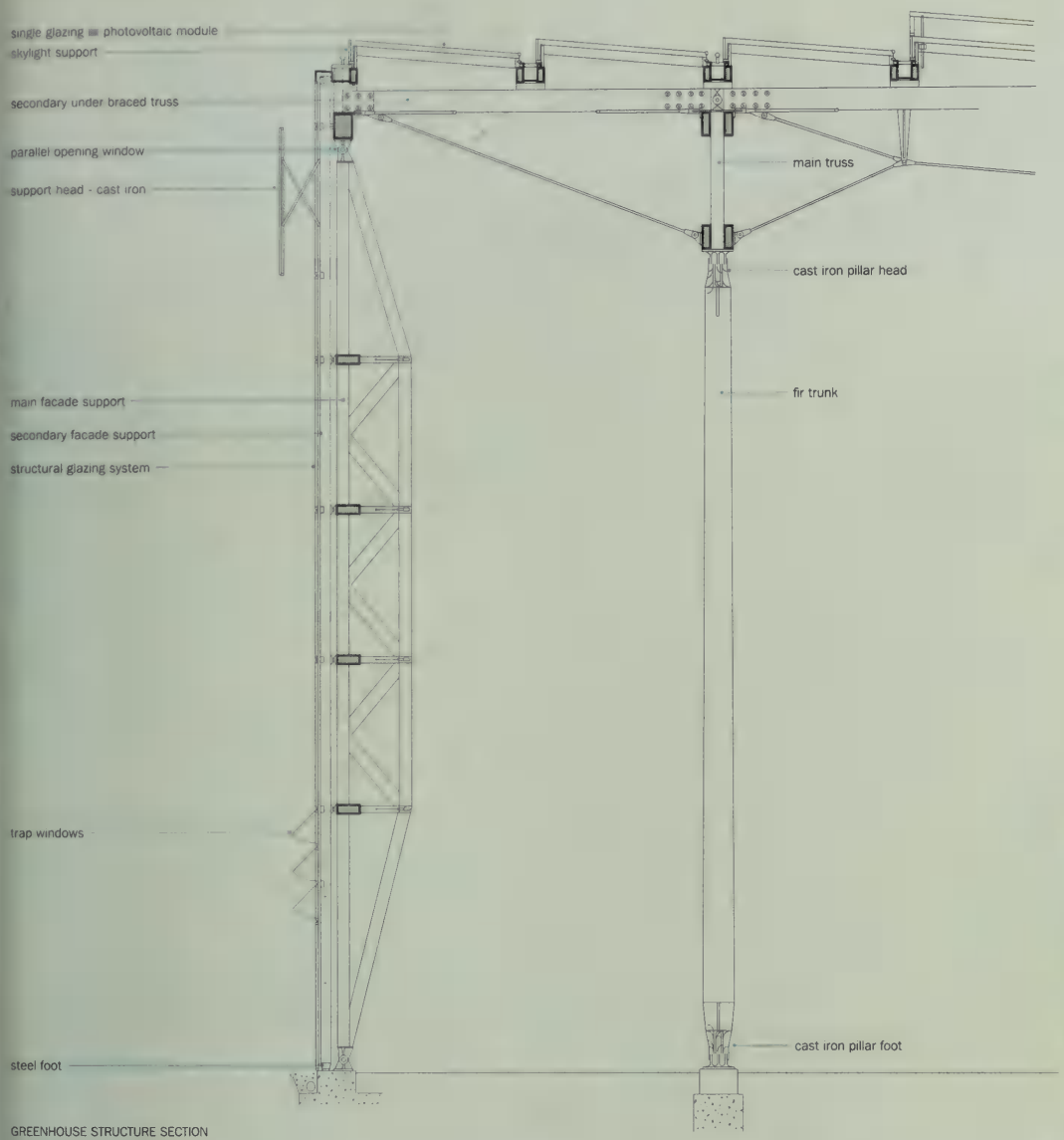
The architects, working with the University of Dortmund, Germany, spent a year using computer and physical models to analyze airflow, heat exchange, lighting, and ventilation. The result is a 123,200-square-foot clear-glass greenhouse with a climate that's more in line with the south of France than northern Germany. As a result, the interior buildings were designed without the heavy insulation, HVAC equipment,



Jourda used an industrial theme for some of the buildings, such as the library (opposite left), which resembles a truncated smokestack. The rooms in the academy hotel open onto a balcony (opposite right) that overlooks the crushed-stone floor and pathways. A broad overhang (right) announces the front of the complex and shades it from the strong summer sun. The timber structure (below) includes pine logs, 16 inches in diameter and 50 feet tall, that were taken from nearby forests. The roof trusses are laminated wood.



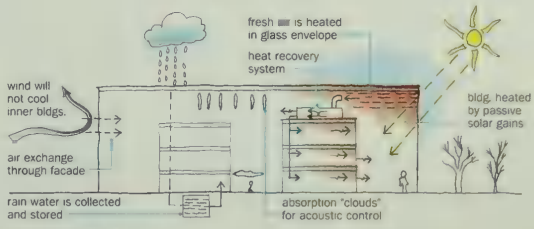




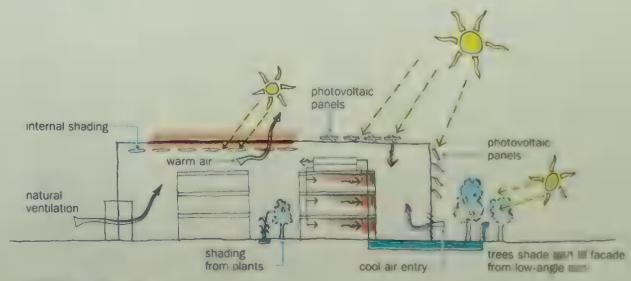
GREENHOUSE STRUCTURE SECTION

The rustic log columns (opposite) are supported by an infrastructure of laminated wood posts and beams. The posts culminate in a series of custom-made cast-iron feet located inside and outside (below) that were designed by the architects and the structural engineers.

Photovoltaic panels (left) are arranged to gather solar power and to provide shading that prevents the interior from overheating. The envelope is naturally ventilated and there is no air-conditioning. In the winter (drawing, top), the concrete and gravel serve as a heat sink, while heat-recovery units pull the warm exhaust air from the conditioned spaces. In the summer (drawing, bottom), cool air is pulled in through envelope openings.



TYPICAL WINTER DAY



TYPICAL SUMMER DAY

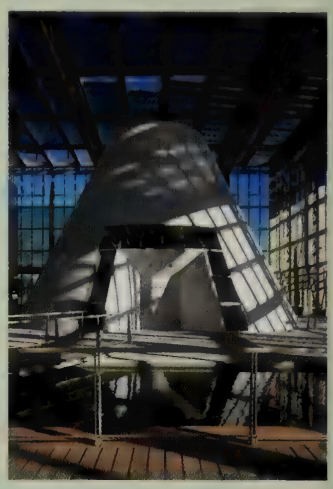
The sum of its parts

The minimalist buildings beneath the glass envelope are arranged in slightly offset rows to create an urban perspective. The buildings are intentionally simple; the architects intended for occupants to spend most of their time in the vast, light-filled atrium.

Limiting the structures to three main building materials—wood, glass, and concrete—maximized the use of pre-fabricated components. Working with a limited palette and designing buildings on a grid, with no irregular shapes and corners (aside from the conical library), minimized waste. In addition, the concrete acts as a heat sink, contributing heat-storage capacity.

The buildings used most frequently by the public are the 2,600-square-foot cone-shaped library and the 5,500-square-foot civic administration offices. They are just inside the front entrance of the complex.

The library serves as an information center, with books, maps, and other materials on Mont-Cenis and the surrounding region. The wood-framed structure is capped by a skylight that's covered with white-light holograms. These direct the sunlight entering the space to the ground floor.



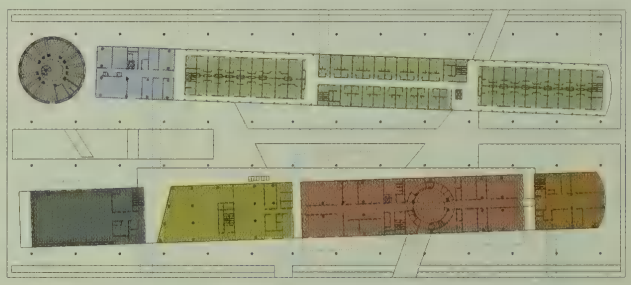
The blocky, three-story civic administration building, next door to the library, is used by residents seeking social security; unemployment remains high in the region.

The 22,000-square-foot classroom building, which, like the envelope, is mostly glass, is accessed from a door on the east side of the complex. It contains another cone-shaped structure which serves as the lobby. Holograms on the skylight over this cone create a kaleidoscope of color on the floor. In the classrooms, floor-to-ceiling windows, spanned by light-shelves, maximize light and air circulation.

Other structures include a three-story hotel with continuous wood balconies around each level; a multiuse hall; and a restaurant, open to the public, with seating inside and out in the atrium.

GROUND FLOOR

- Library
- Civic Administration
- Meeting Center
- Restaurant
- Academy
- Hotel
- Administration Academy



and other elements used in cold-climate construction.

The buildings are arranged in two rows along a central street and canal. Paths crisscross the landscape of concrete, gravel, and exotic plants. The influence of the industrial machine is clear; the truncated library recalls a smokestack, while the multipurpose hall is contained in a windowless rectangular box. But the factory metaphor blurs when the architectural details and materials are examined. The buildings are clad in rough, bleached-wood siding, while portals are found in some of the building's doors. Continuous wooden decks run outside the buildings. Without its protective glass envelope, this is an architecture that would be unthinkable in a northern climate.

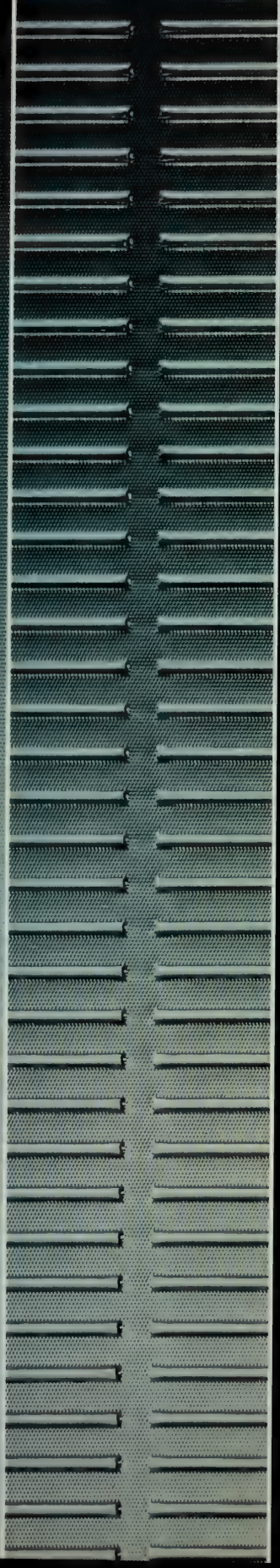
The hangar-like greenhouse is at once simple and sophisticated. In the winter, it works in tandem with the concrete and gravel floors to collect solar energy, while acting as a thermal buffer. In the summer, doors are left open to allow the breezes to enter. Louvered openings in the lower quadrants of the glass structure bring in cool air, while warm air is exhausted through roof vents. The stack effect is enhanced with internal shades near the ceiling that trap solar heat and induce airflow. Potted tropical plants and a central pool contribute their own cooling effects.

These seemingly basic operations are controlled by a highly specialized computer system that adjusts the size and number of openings in the envelope on an hourly basis. Sensors within the building and outdoors monitor internal and external temperature differentials, wind direction, the angle of the sun, building humidity, lighting, and other factors. This information is fed to the computer system, which adjusts the building's mechanical systems accordingly.

Concrete-lined tunnels, or "earth ducts," almost 10 feet below ground, conduct fresh air from their intakes, located 164 feet from the center of the envelope, to the building. The air, driven through the 6½-by-6½-foot tunnels with fans, is naturally cooled or heated during very hot or very cold periods respectively, thanks to consistent below-grade temperatures.

The buildings within the envelope were positioned to maximize airflow. Each has windows that open to the hall, bringing in the naturally conditioned air. Heat-recovery units pull the warmth from exhaust air and minimize the demand for heating energy. There is no artificial cooling in the complex.

Air is not the only natural element circulated through the project. Rainwater is collected from the roof by a syphon system using four-inch-diameter pipes that run down the facade behind the vertical columns. The water, collected and filtered in an underground cistern, is used to clean the roof, flush the toilets, and water the lawns.



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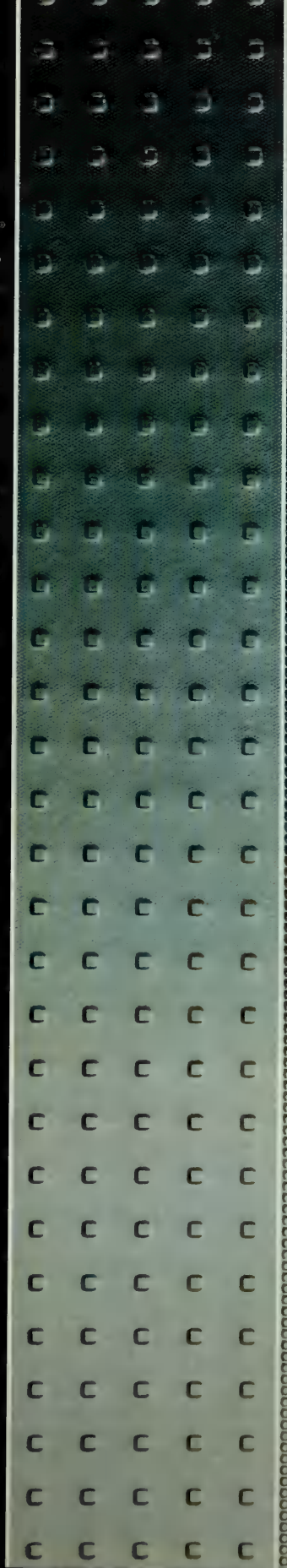

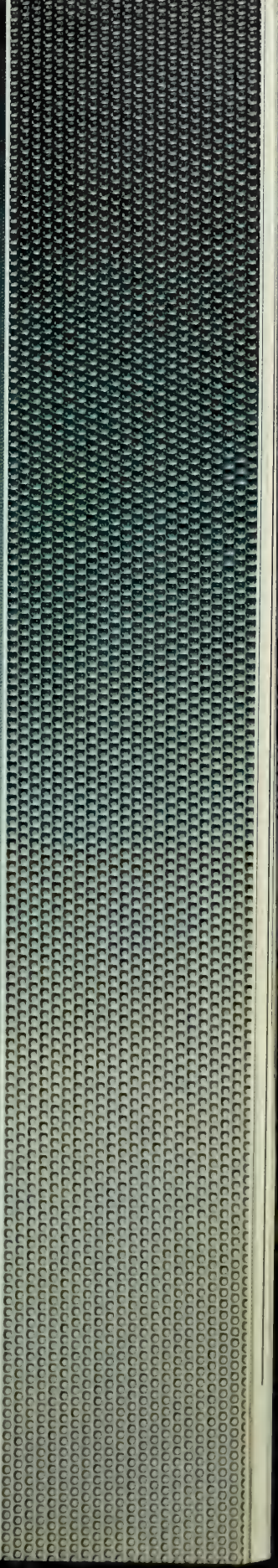

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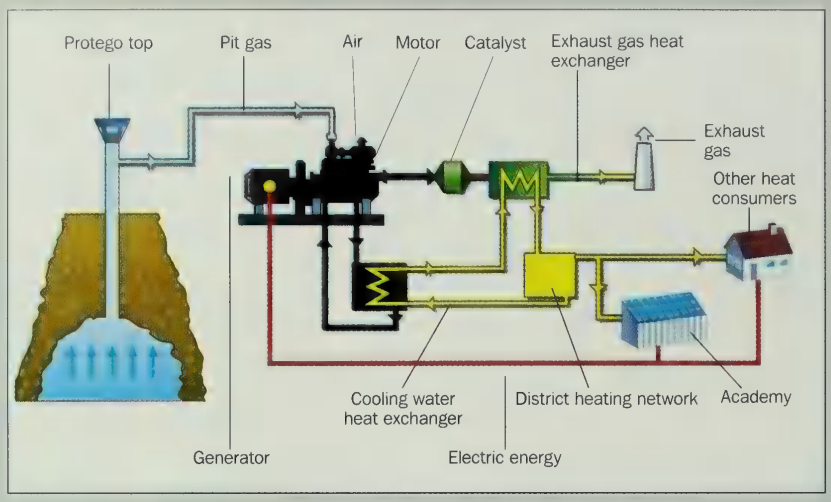
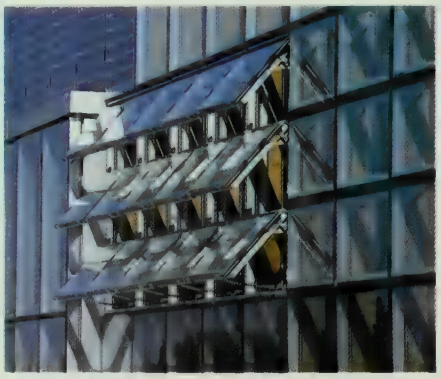
On-site power plants

Although all coal mines emit some gas, and the shafts surrounding the Mont-Cenis Academy are no exception. The mines vent approximately 36 million cubic feet of methane, as well as other toxic gases, each year. Before Mont-Cenis was built, this gas was simply vented into the atmosphere. But Jourda and Hegger, working with the University of Dortmund and the local utility, Stadtwerke Herne AG, conceived of two cogeneration plant modules at Mont-Cenis that would use the gas to create electricity and heat.

Located at the eastern edge of the park, the mine-gas-driven cogeneration plants supply 235 KW/year of electricity and 378 KW/year of heat. The electricity supplements that produced by the photovoltaic array atop the building envelope. The heat is used to warm the complex. Oddly, more gas rises in overcast weather conditions than when the sky is clear, making the cogeneration facilities a perfect compliment to the photovoltaic system.



Some of the energy that isn't used is stored in a 2.2 MWh battery storage plant, also on the property. That energy is used to reduce peak demand loads, to compensate for perturbances in the solar supply system, and to supply emergency power to the complex. Any remaining supply is fed back to the utility grid. The plants are likely to pay for themselves within their first year of operation. That's because the amount of power they're giving back to the grid is enough to prevent the local utility from having to build a new power-generating station. These savings are being passed on to Mont-Cenis.



Building openings (left) are controlled by a computer system that monitors indoor and outdoor temperatures. There is no air conditioning. PV panels, clustered in varying densities on the roof (right), create cloudlike patterns below. There are no panels over the center atrium.

Over the mines

The site conditions were, in many respects, the major constraint of the project. Mine shafts lie all around the site. One reaches a depth of 4,268 feet—the deepest in the Ruhr region. The barren site of a former coke furnace, with soil so polluted that vegetation will not grow, lies 650 feet north. The former pit head of the mines lies directly beneath the building. In fact, the site stands several yards above street level, thanks to the 20-foot-high pile of tailings, gravel, and waste material taken from the shafts

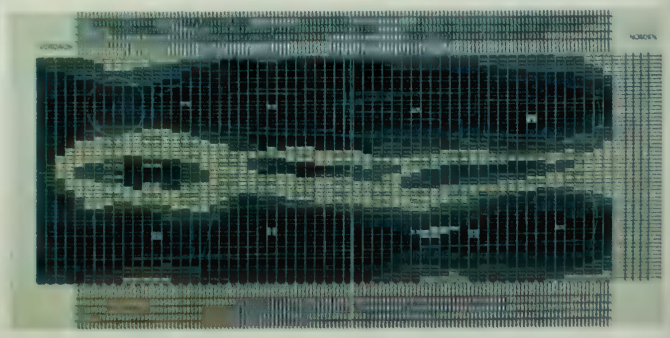
"The original competition brief spoke of finding a context for the structure from the nearby town," Jourda says. "But we were, instead, worried about the land beneath us." Rather than engage the site, she floated the project on concrete piles.

The envelope is a three-part structure. Its primary support system, a grid of tree trunks 18 inches in diameter and 50 feet tall, supports the laminated roof trusses. The forest of rough-hewn fir columns is both rustic and refined. "Wood is the ultimate ecological material," Jourda says. "It is renewable and can be used with little waste." The pines, selected from nearby forests, were cut more than a year before they were installed, leaving them time to dry naturally. Even so they are scored along their entire length to allow shrinkage without cracking. The trunks are anchored to the concrete foundation with custom-made cast-iron feet designed by the architects and the engineers. The connections allow for movement in the logs, which sway as the building moves.

The primary support system is capped by a secondary structure of wood beams and wall trusses. The function of this is to support the tertiary structure. This consists of structural-glass facades and an aluminum frame that holds the laminated-glass roof.

Rooftop power plant

It is no wonder that the architects refer to the roof as a power-generating station. Photovoltaic (PV) cells are embedded in an ultraviolet-resistant resin between the layers of glass on the roof and also on the south and west facades. These produce two and a half times the energy that the complex needs, about 750,000 KW/year. The power generation is monitored by a computer system that directs any surplus into Herne-Sodingen's electric grid. At night and during periods of low



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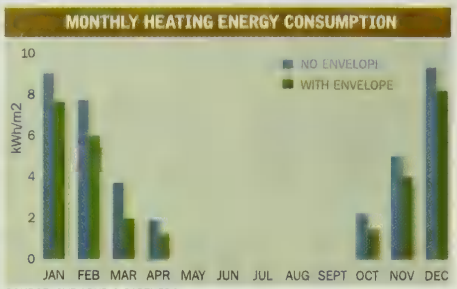
light for complex pulls energy back from the electrical grid or draws from methane-powered cogeneration plants on the site. The rooftop PV array covers 83,700 square feet, while the facades support a 7,000-square-foot array. The solar energy is converted to usable power with 600 modular inverters. Altogether Mont-Cenis represents the largest use of PVs in Germany, Hegger says.



SOURCE: OVE ARUP & PARTNERS

The original competition brief didn't call for the use of PVs. But when the architects showed the clients how much energy the space could produce, the installation of the PVs became a priority. In fact, it was the power company that funded half of the 15 million DM (about $28 million) budget for the PV system, an investment that is paid back daily in additional energy resources.

The roof has a 4 percent southfacing incline to optimize solar gain. Originally, the solar cells were evenly distributed across the roof. But computer modeling demonstrated that the building interior would be darkened by the density of cells. So Dr. Helmut Muller, a professor at the University of Dortmund who led the solar design research, concentrated the cells over the internal buildings and left clear glass between the buildings and over the central thoroughfare. Also, the cells within the panels are arranged in varying densities—from 86 percent directly over the buildings to 58 percent in transitional zones. The dappling of the cells, along with the shifting daylight, creates ever-changing cloud patterns.

"The PV panels also satisfy the need for shade and enclosure," Hegger adds. To avoid overheating the building, 65 to 80 percent of the roof area and 25 to 40 percent of the south and west facades are shaded. Trees around the envelope and ivy planted along the walls also help.

The PV system, along with the other energy-saving aspects of the building, are manageable and intelligent choices that architects can use to help overcome the odds at a site like Mont-Cenis. "With the end of heavy industry in Germany, we have learned that knowledge is the best protection," Hegger says. "We have seen a lot of fashions in architecture. But real change comes from economic or political forces. We are entering a phase when these economic questions need to be solved and architecture will need to find solutions." Jourda agrees: "Most ecological architecture is just good sense." ■

Credits

Project: *Akademie Mont-Cenis*
Owner: *Federal State Nordhein-Westfalen, City of Herne*
Architects: *Jourda & Perraudin Architectes, project; Jourda Architectes, planning; Hegger Hegger Schleiff HHS Planer + Architekten BDA*
Engineers: *Ove Arup & Partners, Schlaich Bergermann + Partner, HL Technik AC*
Interior designer: *Jourda Architectes*
Landscape architect: *Desvignes + Dalnoky; Latz, Riehl, Schulz*
Lighting: *HL Technik AG*
Climate and daylight simulations: *Institut fur Licht und Bautechnik*

Sources

Structural system: *Schneider*
Concrete: *PH-Holzmann AG*
Glazing and photovoltaics: *Pilkington Solar International*
Skylights: *ESCO*

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- **Read the article "Giving Back to the Environment" using the learning objectives provided.**
- **Complete the questions below, then check your answers [page 221].**
- **Fill out and submit the AIA/CES education reporting form [page 221] or file the form on ARCHITECTURAL RECORD's Web site at www.architecturalrecord.com to receive two AIA learning units.**

QUESTIONS

1. What were the problems with the Emscher Park site?

2. How were site conditions used and improved at the Mont-Cenis region?

3. What are the advantages of the glass enclosure?

4. How are natural resources conserved at Mont-Cenis?

5. What has been learned from this innovative project?

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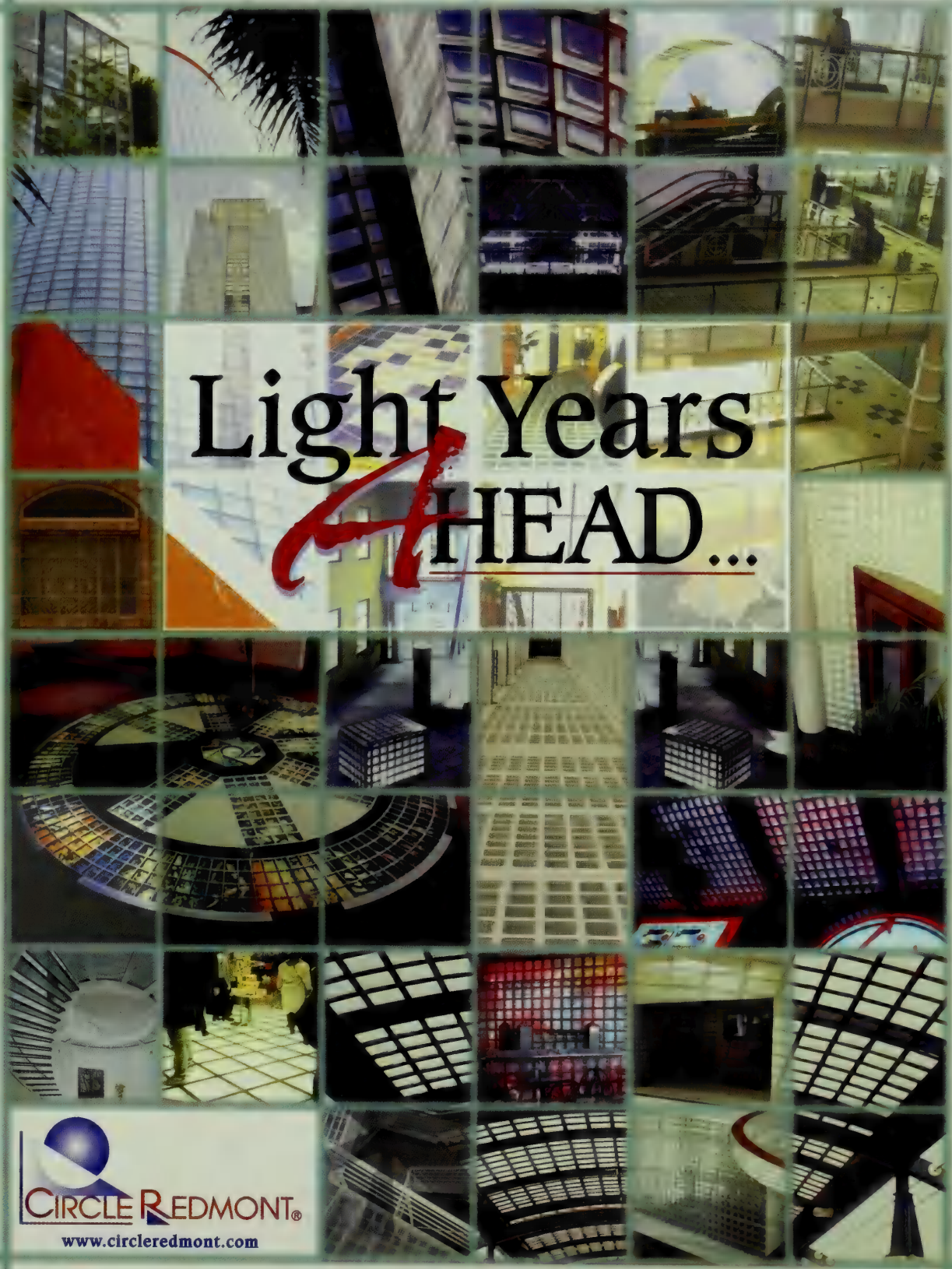

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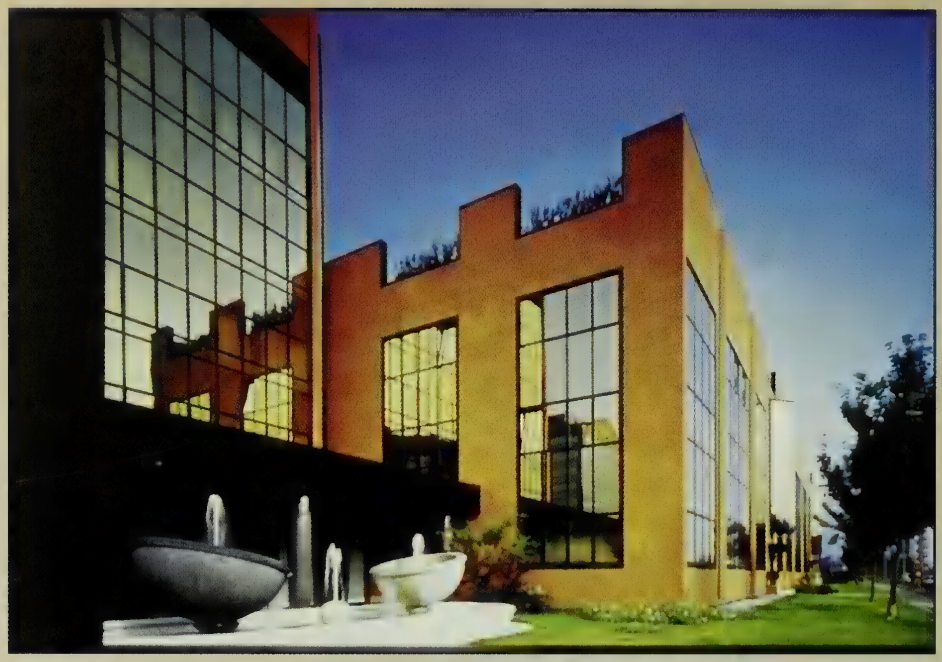
THE ITALIAN TRADE COMMISSION PRESENTS...

FINISHING OUTSIDE WALLS WITH CERAMIC TILE



NEW CLADDING SYSTEMS PROVIDE A DURABLE, ENERGY-EFFICIENT FINISH WITH THE AESTHETIC QUALITIES THAT CERAMIC TILE PROVIDES.

When architects P. J. Gordo and P. G. Fraga, of Miami, were looking for a cladding material for a new office building and warehouse in hurricane-prone Dade County, FL, they knew that what they selected would have to stand up to the most rigorous testing standards in the U.S. The cladding would be required to withstand missile-impact testing, positive and negative uniform static-air testing, and cyclic vibration testing. The material they chose, and the one that passed these criteria without problems, was porcelain ceramic tile.

AIA/ARCHITECTURAL RECORD Continuing Education

Use the learning objectives below to focus your study as you read ***Finishing Outside Walls with Ceramic Tile.*** *To earn two AIA/CES Learning Units including one hour of health safety credit, answer the questions on page 216 and follow the reporting instructions on page 221. Or use the Continuing Education self report form on www.architecturalrecord.com.*

Learning Objectives:

After reading ***Finishing Outside Walls with Ceramic Tile*** *you will be able to:*

- *Explain the advantages of ceramic tile for exterior cladding.*
- *Describe the difference between curtain wall assembly and field-applied tile systems.*
- *Explain why ceramic tile performs well in high wind situations.*

But perhaps what Gordo and Fraga's client was most impressed with were the custom-made decorative porcelain panels that can be used individually or, as in this case, pieced together to form a mural on the outside of the building (see photo below right). The panels are designed by hand or on a CAD system. Then a computer system guides a machine, resembling a large computer printer, that lays various colorations (metal oxides) in place on the tiles. This is followed by a layer of glass granules that absorbs the vibrant colors. The resulting tiles are just as durable as the standard slabs, which are also available in a range of saturated or subtle colors.

Recent innovations make ceramic tile suitable for cladding a wide range of building types in all climates. New production techniques make it possible to produce pieces of both of these materials in sufficient size and moderate weight to make them competitive with natural stone veneers, some types of metal, and precast concrete. Italian companies, which are among the largest manufacturers in the world, offer exterior-rated ceramic tile in sizes including approximately 12 by 24 inches, 24 by 24 inches, 24 by 47 inches, and 35 by 35 inches.

Slabs range in thickness from .35 inches to .59 inches, depending upon the size of the panel. The size of the slabs

Advertising Supplement Provided by The Italian Trade Commission

ted for a building is primarily an aesthetic decision. Slabs can be cut to fit smaller areas with a diamond- water saw-much like granite and marble, though, design stage, it is possible to produce a facing out cutting. One of the advantages of these tiles is he color is consistent throughout the depth of the Trim pieces are available for use around windows, joints, corners, and transition areas.

HARACTERISTICS OF CERAMIC TILE FOR VENTILATED WALLS

- NCE TO ATMOSPHERIC DEGRADATION OVER TIME
- F INSTALLATION
- NCE TO THE FORCES OF WIND
- VATER PROOFING
- NCE TO FIRE
- NCE TO CHANGES IN TEMPERATURE
- NCE TO SHOCKS AND IMPACT
- IAINTENANCE
- F REPAIRING BY CHANGING SINGLE ELEMENTS
- VE LIGHTWEIGHT

elain tiles have a water-absorption that is less than ercent. This not only makes them durable, it keeps aterials beneath dry. The porcelain slabs also have tremely hard surface and a dense body. Unlike , they are uniform in their durability; there are no ally occurring fissures where water, ice, and dirt nfiltrate and corrode the finish. The tiles are also fast, fireproof, and resistant to degradation by pol- ts and ultraviolet radiation. They are capable of standing extreme weather conditions and stand up gh winds. Porcelain slabs are also low maintenance; don't stain and graffiti is easily removed.

t's important to evaluate the overall lifecycle costs is system. The large tiles go up on the building ly and easily, thereby reducing installation time ees, resulting in a total system cost that is about 15 percent less that of a granite cladding used in a arable building.

The mechanical installation system can offer signifi- energy savings. And the durability of the material is it will last indefinitely.

AT'S BEHIND THE TILE?

mic tile cladding systems can be applied w or existing structures. Suitable substrates on structures include concrete block, brick, metal , or reinforced concrete. On old buildings, the tile can, in most cases, be applied over the existing g, whether wood, brick, or concrete.

Before installation, it's necessary to assess the rate carefully, particularly when the tile is to be lled on an existing building. If the walls are new, nportant to check that they are properly matured. tural movements due to temperature changes, variations in materials, and shrinkage can differ greatly and must be taken into account before selecting an installation system. Also important to evaluate are the formal demands of the architecture, the accessibility of the site, building codes, and timing.

The weight of the system and the effect of the wind should also be assessed. Wind-load standards exist around the world. In Italy, as in the U.S., the geographical zones are subdivided according to the level of wind exposure. By comparison, German standards divide the building itself into six different areas based on height and the corresponding wind force.

The system performs well in high winds for several reasons. Firstly, its strength resists fastener pullout and impact from projectiles. Even if an object hits a wall section with sufficient force to break it, a glass-fiber netting adhered to the back of the tile will prevent the shards from raining down, causing accidents and further damage to the facade. The tiles slick surface offers little resistance and permits airflow. Finally, the different methods of adhesion are specifically engineered to stand up to high winds.

The system is relatively lightweight, averaging 77-99 lbs per 11 square feet including the weight of the substructure that fixes the panels to the wall. That permits it to be installed with little strain on a structure's carrying capacity. It also guarantees that the cladding goes up quickly and with lower installation costs than heavy-stone cladding.

There are two categories of exterior tile installation systems: curtain wall and field-applied. The first type predominates in new construction. The architect specifies the size and color of the tile slabs and the dimensions of the walls. The tile is then delivered to a curtain-wall fabricator, who anchors the tile in a conventional stainless-or galvanized-steel, or aluminum frame. The prefabricated modules are delivered to the site and put in place with a crane. These preassembled systems, which

EXTERIOR INSTALLATION OF TILE

GENERAL GUIDELINES/INDUSTRY STANDARDS:

The following guidelines should be considered when proposing exterior installation of ceramic tile.

- Tile selected should be rated and suited for exterior installation in the geographic region of the job.
- General guidelines on surface preparations, ambient conditions of the jobsite are outlined in ANSI AN-2, AN-3 and AN-4.2, AN4.8, AN-4.11, A108-1A and A108.1B.
- Application of latex portland cement mortar adhesive is described in ANSI A108.5 by tile type as well as exposure.
- Application of grout on tile work is described in ANSI A108.10.

RECOMMENDED APPLICATION METHODS AND PRODUCTS

Exterior tile application recommendations should be as described in TCA F101-99, F102-99, F103-99, W201-99, and W202-99.

- A bond coat of ANSI A118.4 latex cement mortar as referenced under the materials section of the TCA specifications listed above.
- Utilize ANSI A118.6 grout as specified under the materials section of the specifications above.
- When a trowel-applied membrane conforming to ANSI A118.10 is specified it is recommended to use a Waterproofing and Crack Isolation membrane product.

Note: TCA is the Tile Council of America

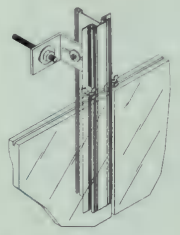
For technical assistance or specification information call 1-800-361-4022.

ATTACHING CERAMIC TILES TO THE MECHANICAL STRUCTURE

VISIBLE CLIP

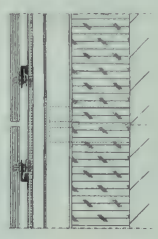
VISIBLE FIXING:
The ceramic facing slabs are mounted and held in position with visible fixing clips along the edges of the substructure. These steel or aluminum clips are elastic. Usually the fixing points are near the corner, and they are connected to the mounting points with self-tapping screws or rivets. Non-rigid silicone or polyurethane base seals can fit to the mounting profiles.

HALF-VISIBLE CLIP



INVISIBLE FIXING:
The ceramic slabs are fixed at four points on an aluminum or stainless steel substructure. An undercut hole is made, using a diamond-tip drill, at the fixing points on the ceramic slabs. An expansion bolt is inserted into the undercut hole. The slab attachment if fitted with a revolving plug or bolt of stainless steel.

INVISIBLE CLIP



SEMI-VISIBLE FIXING:
The edge of each ceramic slab contains a groove, or kerf, in which is placed part of the clip. The clip is then attached to the mounting points with self-tapping screws or rivets. This method can, only be used with extruded tiles, however.

contain windows, insulation, and a waterproof coating as well as the slabs, speed the building process and assure better control over quality.

SLABS ON SITE

Field-applied tile systems may be chemically or mechanically adhered to the supporting wall. In some buildings, there is a mixture of chemical and mechanical attachment. For chemical anchorage, tile slabs can be directly applied onto metal frames, concrete, brick, stucco, and other materials as a finish veneer. This is the fastest installation system, but it requires a level substrate that is free of paint, dirt, and other residues.

Tile manufacturers worked with adhesive producers to develop ready-made silicone adhesives. These guarantee the durability of the bond over time. The joints between the tiles are sealed with silicone. The elasticity of the silicone allows room for expansion and contraction.

Mechanical anchorage systems, also called ventilated facades, use a metal grid substructure with brackets and clips to hold the slabs in place. Terra cotta tiles can also be locally fixed. This is accomplished by fixing anchors at intervals that correspond to the size of each slab. Installers recommend at least four anchors per tile, located near the corners of the slab. The terra cotta pieces are then attached to these anchors with corresponding kerfs cut in the back and edges of the tile. This offers some advantages in that the cladding pieces are independent of each other and won't deform due to stresses from surrounding tiles. However, the pieces must be hefty enough to stand alone; manufacturers can provide guidance as to what size is best.

Ceramic tiles can be attached to the building with standard aluminum studs that are affixed to the wall with expansion or injection plugs. Horizontal members are held to the studs with rivets. The spacing of the vertical and horizontal members varies according to the size of the panels and the height of building. The gauge is specified by the manufacturer.

Once the framework is in place, the ceramic facing slabs are mounted with either concealed brackets, half- or semi-visible, or visible fixing clips. Concealed brackets offer an aesthetic improvement over the visible variety, but they are more labor-intensive to install. In the concealed system, the aluminum brackets are attached to the back of the tile with self-tapping stainless steel screws. The assembly is then hung onto the horizontal members of the substructure.

Half-visible and visible clips are made of stainless steel. Half-visible clips are attached to the vertical studs. These lock into kerfs along the sides of the slabs. The visible clips are also first affixed to the vertical studs. The slabs are set into the clips, which form a clamp-like hold.

Whether visible or concealed clips are used, they are usually attached near the corners of the slabs. The number of clips depends on the stresses to which the facade is subjected; wind force is especially important. The brackets allow for some movement in the materials so that the system can respond to changes in temperature and pressure. Minor final adjustments are allowed by applying shims on the back of the wall bracket or clip. Once the slabs are perfectly aligned, screws are used for fine adjustment to fix them into precise position.

To prevent the panels from vibrating in the wind, a ı, 1/16-inch neoprene rubber gasket is inserted between brackets and the tiles in a channel within the studs. A ber strip also cushions any movements between the tile ɔs and the metal substructure, which expand and con- t at different rates.

TAILING MECHANICALLY PLIED SYSTEMS

open joint of approximately .4 inches is usually located ween the slabs. This gives them room to expand with perature changes. The joints can be filled with silicone, it is better if they are left open. This provides better mal performance and keeps the building dry by allow- any moisture migrating from the inside to evaporate.

Closed joints-placing the tiles so that the edges ch-can also be used, though this method may be blematic for several reasons. Firstly, mechanical ss is transmitted through all the tiles. Hanging them his way requires exacting measurements, which takes ger and may negate any savings. Finally, some type oint is necessary every 16 feet or so meters.

Tiles can be ordered with a glass-fiber netting bond- o the back. This prevents the slabs from shattering in ɜ of accidental breakage. The netting is recommend- 'or each of the installation systems, except for those are chemically adhered. It adds less than one per- t to the total installed cost.

Another advantage to mechanical fastening is the ɜ with which a damaged area can be repaired-without ıiring the entire wall to be replaced. A single slab be lifted out and replaced simply and without dis- ›ing adjacent tiles.

Openings at the base of the building and the top, ch provide for air circulation, may be fitted with a al screen which allows the passage of air, but pre- ts small animals from entering the cavity. Depending he design of the building, it may be necessary to h the top of the wall in such a way that it permits the sage of air, but prevents the entry of water. Corner els can be mitred or butt-jointed. They may be sealed ı silicone or left open.

If the cladding is applied over an existing building, often easiest to simply recess the windows. To close gaps around the window frame, lightweight metal ı can also be used, usually in the same colors as the dow frames and provided by the same supplier.

Another option is to cut pieces from the slabs to fit into the gaps, similar to what is often done on granite, marble, and other stone-faced structures

SAVING ENERGY

Tiles that are mechanically installed over a gridwork of vertical studs and horizontal bars or affixed with anchors can improve the thermal efficiency of the building. The approximately two- to six-inch cavity between the back of the cladding and the surface of the building permits a thin, continuous airflow, forming an insulating air jacket. In the winter, this airflow prevents moisture migrating from the inside of the building to the outside from condensing on the back side of the cladding. During both heating and air-conditioning seasons, the airflow impedes the passage of water from the cladding to the internal wall. It also provides a sound barrier, keeping the building's interior quieter.

The performance of an air-jacket system depends on maintaining openings at the top and the bottom of the installation and making sure nothing impedes the flow of air-elements interrupting the continuity of the airflow can lead to localized convective flow. The joints between the slabs are also usually left open, creating a ventilated skin.

Thermal performance is further improved by adding a continuous layer of nonhydrophillic (won't absorb moisture) insulation. It may be attached with chemical bonding agents or metal screws. The number of interruptions in the insulating layer and thermal bridges between the interior and the exterior must be carefully detailed.

The addition of insulation is particularly important when an existing building that may have little or no insulation is re-clad. It is important to maintain an airspace between the insulation and the tiles, however, to obtain the benefits of the air jacket.

The amount of savings on heating and air conditioning that comes with a ventilated wall system will vary according to the building type, its overall efficiency, and the climate. According to the Italian Trade Commission, in Europe, where energy costs are significantly higher than in the U.S., savings are high - as much as 25 percent for some buildings. ■

ADVANTAGES OF VENTILATED WALLS

- Protection from heat
- Heat Conservation
- Humidity Removal
- Noise Insulation

he Ceramic Tile Department of the Italian Trade Commission in New York, in its nineteenth year of operation, remains e source for up-to-date information on Italian ceramic tile as well as a major link between Italian manufacturers and the merican market. This department works closely with the Italian association **Assopiastrelle**, which represents Italian ɜramic Tile and Refractory Manufacturers. **E-mail: www.assopiastrelle.it**

ıe Ceramic Tile Department's most requested service is the telephone tile searches. Free referrals are provided to prospec- 'e buyers. Using a computer database, callers are assisted in locating sources for specific Italian tile companies.This office so provides various publications on ceramic tile, including the newsletter, ***Tile News, The Guide to Italian Tile***, a guide to andards, selection and installation of Italian ceramic tile; and ***The Buyer's Guide to Italian Ceramic Tile.***

LEARNING OBJECTIVES

- Explain the advantages of tile and terra cotta for exterior cladding.
- Describe the difference between curtain wall assembly and field-applied tile systems.
- Explain why tile and terra cotta perform well in high wind situations.

INSTRUCTIONS

Refer to the learning objectives above. Complete the questions below. Then turn the page upside down and check your answers. Fill out the reporting form on page 221 and submit it or use the Continuing Education reporting form on *Record's* web site, www.architecturalrecord.com to receive two AIA/CES Learning Units including one hour of health safety welfare credit.

QUESTIONS

1. What are the advantages of ceramic tile use on exterior of buildings?

2. Why does ceramic tile perform well in high winds such as hurricanes?

3. What are the advantages and limitations of chemically anchoring tiles?

4. What are the advantages and limitations of mechanically anchoring tiles?

5. What is curtain wall tile application?

ANSWERS

1. Ceramic tile can be produced in pieces of sufficient size and moderate weight to make them competitive with veneers of stone, metal and concrete. Tiles are consistent in color throughout the depth of the slab and is uniform density so there are no fissures where water, ice and dirt can infiltrate and corrode the finish. They are colorfast, fireproof, and resistant to degrading from pollutants and ultraviolet radiation. Large tiles go on the building quickly and easily, thereby reducing installation time and fees. Trim pieces are available for use around windows, joints, corners, and transition areas. Tiles have a low water-absorption rate that makes them durable and keeps the materials beneath dry.

2. The strength of the tile resists impact and fastener pullout. The slick surface of ceramic tiles gives little wind resistance which permits airflow around the perimeter of the building. The back of the tiles has a netting adhered to it, which will prevent the shards of a broken tile from raining down the facade. The methods of adhering tiles to a building are engineered to be strong enough to resist high winds.

3. Chemical anchoring is the fastest installation system, but it requires a level substrate that is free of paint, dirt, and other residues. Tile slabs can be directly applied onto metal frames, concrete, brick, stucco, and other materials as a finish veneer with adhesives. Silicone adhesives guarantee the durability of the bond over time. Silicone between tiles allows for expansion and contraction.

4. Mechanical anchoring systems use a metal grid with brackets and clips to hold the slabs in place. Joints are left open between the slabs. This offers the advantage of providing an air space for keeping the building dry and improving thermal efficiency of the building. Another advantage is in keeping the cladding pieces independent of each other so they will not deform due to stresses from surrounding tiles. This also allows ease in repairing a damaged area without having to replace the entire wall.

5. Curtain wall application is used in new construction. The tiles are made in the specified color and size, then anchored to a steel or aluminum frame. The prefabricated modules are delivered to the site and put in place with a crane. These preassembled slab systems contain windows, insulation, and a waterproof coating, which speeds the building process, and assure quality control.

FOR MORE INFORMATION CONTACT:
THE ITALIAN TRADE COMMISSION
Ceramic Tile Department
499 Park Avenue, New York, NY 10022
Tel. 212/980-1500 - Fax. 212/758-1050
e-mail: newyork@italtrade.com
web site: www.italtrade.com or www.italytile.com

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Ceramic Tiles of Italy

Design

Competition

2000

Ceramic Tiles of Italy announces the New Millennium Special Edition **Design Competition 2000.** Sponsored by Assopiastrelle, the Association of Italian Ceramic Tile Manufacturers, this prestigious Italian awards program recognizes North American architects and interior designers that have used Italian ceramic tiles in innovative commercial and residential settings.

Submission Guidelines:
All tile projects must be completed by February 28, 2000. Submission materials must be received by March 15, 2000. The $ 20.000 cash award will be presented during an official ceremony at Coverings 2000, the International Tile and Stone Exposition, on Wednesday, May 3, 2000. The winning projects will be widely publicized in leading international architectural magazines.

For more information and to request the official guidelines, contact the Italian Trade Commission, Ceramic Tile Department, 499 Park Avenue, New York, NY 10022, ph. 212-980-1500.

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FINE PORCELAIN STONEWARE

ALTAIR

The Altair collection is the most technologically advanced project in the field of fine porcelain stoneware. Altair is the result of a procedure entirely studied and implemented by Cooperativa Ceramica d'Imola, using equipment specially designed to provide a special distribution of the mixes when they are loaded into the presses, with truly startling results from an aesthetic point of view. The surfaces of the tiles have veins and stripes which change continuously, creating a special dynamism which suggests beautiful natural scenery, depending on the basic colour. Each tile simultaneously reflects chaos, with its primeval energy, and cosmos, with its beauty and harmony. The novelty and importance of the ALTAIR series are confirmed by the fact that we have decided to make it available in a wide range of sizes, medium and large (30x30; 40x40; 60x60; 60x120 cm), including steps (33x125 cm) and risers (14x125 cm); colours (11); versions (natural, honed and polished), so each customer can find a solution tailored to suit his requirements and tastes.

Thanks also to a wide range of accessory fittings, these features make Altair highly versatile to use: from public use to home use, including public places with heavy traffic, where a product of exceptional technological quality is needed which can also offer great aesthetic quality, combining the beauty of marble with that of ceramics.

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CERAMIC TILES OF ITALY

Italian Ceramic Tiles are on display at CERSAIE The International Exhibition of Ceramics for the Building Industry and Bathroom Furnishings. Bologna, Italy, October 3 - October 8, 2000. www.cersaie.it. For more information or for a tile dealer near you, contact the Italian Trade Commission, I.C.E./Tile Center, 499 Park Ave., NY, NY 10022 (212) 980-1500 Fax (212) 758-1050. italytile.com

www.ceramictiles.it

CIRCLE 91 ON INQUIRY CARD

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

ANSWERS

Questions appear on page 208. To receive CES credits, fill in the education reporting form below or on our Web site (www.architecturalrecord.com).

1. The site is within what was formerly the largest industrial region in Europe, including coal mines, steel works, and coke processing plants. Acid rain dumped several million tons of sulfur dioxide each year on the soil, some of it already contaminated by coal sludge and other industrial waste. Even though the Sodingen mine was closed in 1978, shafts still lie below. Methane gas continues to seep from the mine vents at a rate of 36 million cubic feet per year.

2. Many of the former factories in the area are now galleries, concert halls, and museums. The outdoor areas are used for exhibition spaces, cafes, and restaurants. Mont-Cenis, the hill on which the complex stands, consists of gravel and other material taken from the mine shafts and was converted into a park. The methane gas from the mines is used to power cogeneration plants.

3. The clear-glass greenhouse creates a mild microclimate more in line with the south of France than northern Germany. This resulted in lower construction costs for the buildings within the shell and less energy use. In winter, the greenhouse collects solar energy and acts as a thermal buffer. In summer, louvered openings in the lower quadrants of the glass structure bring in cool air, while warm air is expelled through roof vents. This mild climate allows the occupants to gather in the atrium, reducing the need for larger indoor spaces.

4. Fresh air pulled through concrete-lined tunnels 10 feet below ground is naturally heated or cooled, depending on the season, before it is released into the glass envelope. There is no air-conditioning. Instead, a computer system monitors internal and external temperatures and adjusts openings in the envelope accordingly. Rainwater is collected on the roof, filtered, and stored. It is used to clean the roof, flush the toilets, and water the lawns. A photovoltaic array on the roof and the south and west facades provides plenty of electrical power. Surplus power is stored and used at night and during periods of low light. The rest of the surplus energy is channeled into the public power supply. Trees shade the facade in summer.

5. This innovative complex proves that daring design can be generated by ecological solutions. The lessons are that real change comes from economic or political forces and that most ecological architecture is just good sense. These lessons will aid architects in the next millennium who will increasingly design buildings for nonvirgin sites. They will also be renovating old buildings and working to reclaim natural resources and generate power in ways that do not harm the environment.

AIA/CES EDUCATION REPORTING FORM

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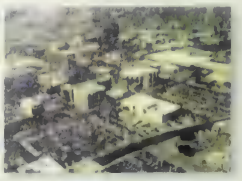
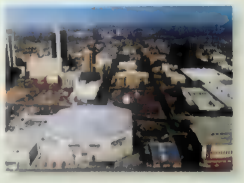
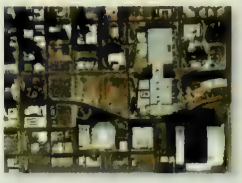
Send completed form to University of Oklahoma, Continuing Education, AIA/CES, Room B-4, 1700 Asp Avenue, Norman, OK 73072-6400; fax 405/325-6965. To respond by E-mail, visit www.architecturalrecord.com and click on Continuing Education. For more information, call 800/605-8229. Please note that in January 2000, some CES credit allocations will change.



Northeast aerial photograph



Northern aerial photograph



Top view aerial photograph

3D models are created when wireframe primitives are "push-pinned" onto 2D source images in **Canoma**.

Sample animation of the ***Collier Center*** developed by **Opus West Corp.** "Fly-over" created by **Nick Hower** and **Kory Kapfer**.

Canoma at work

When **Nick Hower** of **Kitchen Sink Studios**, LLC, needs to quickly and accurately render photo-realistic 3D models, from small buildings to whole city blocks he uses **MetaCreations Canoma**™ software.

By utilizing simple aerial photographs and placing models of the intended construction in a scene, Nick generated the "fly-over" for the $500 million Collier Center in downtown Phoenix you see above, saving him time and money. **"Canoma was a key factor in completing the project on time and under budget"**, says Nick.

Use Canoma to create photo-realistic 3D models from 2D digital images. Export to **VRML2**, or **QuickTime**® movies for playback on the web, or generate real-time interactive streaming 3D models using the ultra-compact **MetaStream**,™ file format.

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Today's Research, Tomorrow's Software

FOUR DOCTORAL DISSERTATIONS DEMONSTRATE THAT THE MOST CREATIVE NEW PROGRAMMING FOR ARCHITECTS WILL COME FROM SCHOOLS.

by B.J. Novitski

There is a crystal ball that can show us the future of architectural software. It depends not on gimmickry but on the fact that tomorrow's technology goes through years, sometimes decades, of development before it becomes commercially available. All over the world, architecture professors and their graduate students are engaged in innovative software research and experimentation. For many, the goal is to produce inspiring design tools, such as those that make 3-D modeling more intuitive, in contrast to the production tools offered by most commercial software developers. For others, the goal is to improve the integration between applications, promising efficiency benefits to the entire construction industry.

Examples of student research-turned-product include the conceptual modeler DesignWorkshop, from Artifice Inc., which architect Kevin Matthews (matthews@artifice.com) began developing as a master's thesis at the University of California at Berkeley and further developed while teaching at the University of Oregon. Lightscape rendering software has its roots in Cornell University's Program of Computer Graphics. Countless other pieces of commercial software have their theoretical or computational origins in the volumes of academic journals from the last several decades.

Modeled with Design Workshop, from Artifice Inc., this interior of a home in Japan demonstrates lighting patterns and effects. The program was developed by Kevin Matthews, an architect who worked on it originally as part of his master's thesis at the University of California at Berkeley. It is one of the few student-developed software programs to reach the commercial market.

Unfortunately, it takes more than a good idea to make a marketable product. According to Matthews, the obstacles are both technical and institutional. In academia, he says, a narrowly focused solution is acceptable as a "proof of concept," in other words, the concept is valid, so fully developing it is unnecessary. Direct interaction between researchers and users makes manuals and technical support unnecessary.

"But to succeed in the marketplace, software has to be part of a complete solution for problems in real-world jobs," Matthews says. "That means you have to develop flawless software plus accessory information, documentation, training materials, packaging, delivery systems, marketing, sales, and support." Although professors can receive academic kudos for generating good ideas, they are less likely to be rewarded for all the work required to bring a program idea to market. Furthermore, work that's done in a university setting is subject to disputes over copyright or patent ownership—does the university itself or do the students and professors retain these rights?

Even so, university researchers tirelessly pursue their innovative work, assuming that the obstacles can be overcome. The following glimpse of four current doctoral dissertations shows some tools that practitioners may be using in the future. Whether all of these will be successfully brought to market is a matter of speculation and luck.

Realm by physics

In the architecture department at Texas A&M University in College Station, Tex., doctoral student Scott Arvin (arvin@viz.tamu.edu) is developing a system for "physically based space planning." In other words, the computer prototype accepts building program parameters, such as square footages and adjacency and separation requirements, and uses them to construct a range of viable floor plans. It is the digital equivalent of moving around scaled pieces of paper to create plan configurations, except that the individual pieces can change shape, many complex considerations can be simulated at the same time, and the resulting footprint has exterior walls that are logically aligned.

IF HUMANS CAN INFER DESIGN INTENT FROM SKETCHES, COMPUTERS CAN, TOO.

Imagine that each space in a bubble diagram is attached to other spaces by springs. The architect assigns a relative strength to each spring proportionate to the need for adjacency between the two spaces. Arvin's computer program applies the laws of physics to the springs to pull some spaces together and push others apart, until the configuration reaches equilibrium. Similar physical simulations are performed for moving spaces that require particular views to particular orientations, for moving interior spaces toward the center of the overall footprint, for aligning the boundaries of adjacent spaces, and for maintaining the necessary area or proportion of each space. For example, a kitchen and dining room would be pulled together while a concert hall and a noisy loading dock would be pushed apart. All of this occurs in an animated format, allowing the designers to observe the effects of the parameters they specify.

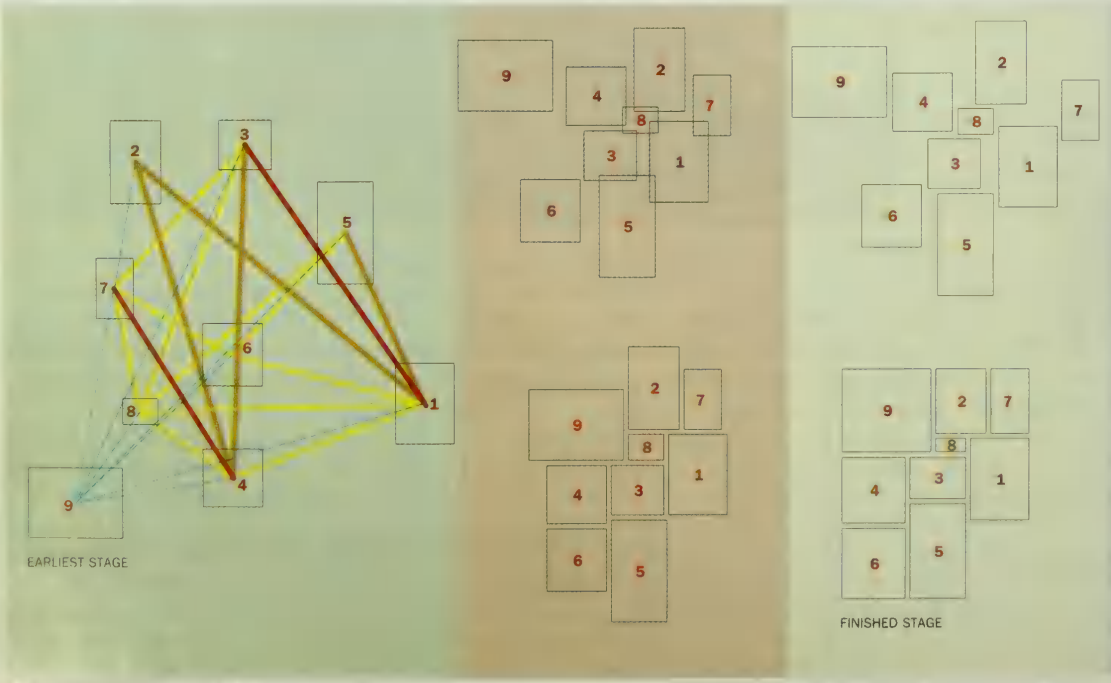
What makes the software a design tool, one that could become part of a larger design system rather than an exercise in physics, is that it allows the designer to interact with the various parameters and make continuous adjustments. This adds the designer's intelligence to the simulation and affords multiple plan configurations from which to choose. "This interactivity," Arvin says, "evokes the feeling that one is working with a living design, one that responds to the user in ways consistent with the programmatic objectives, though it still provides intuitive designer control."

Right tool at the right time

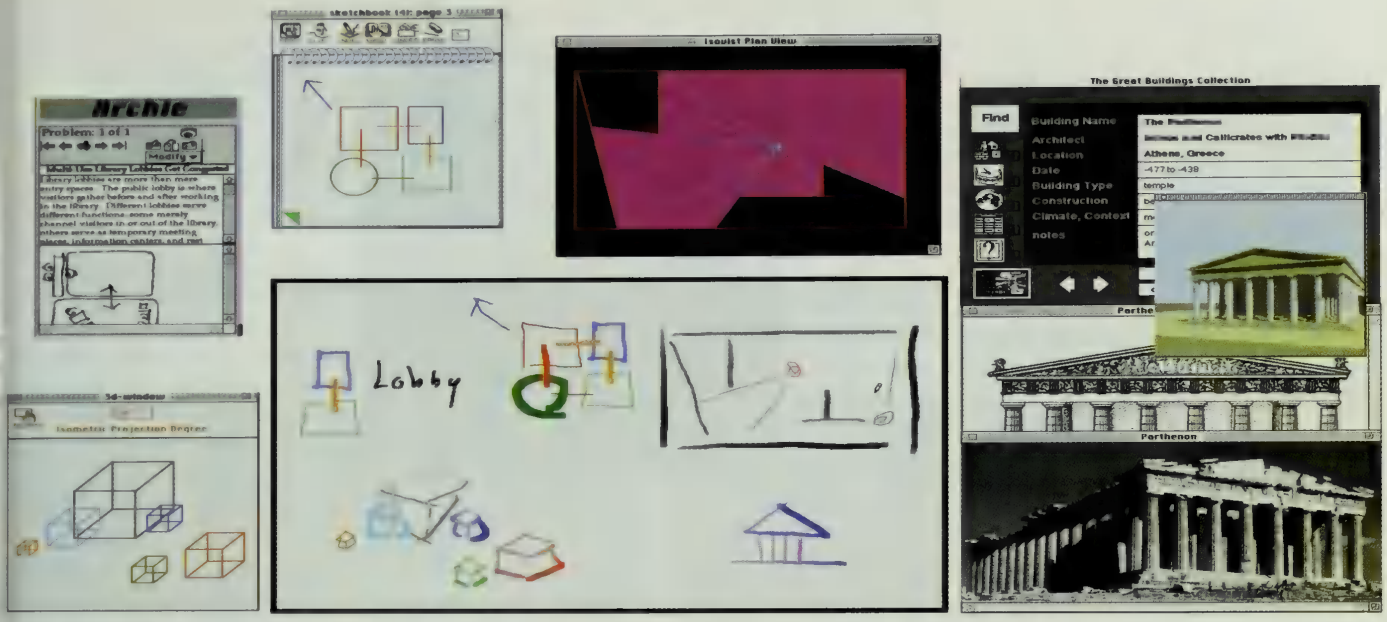
Many architects remember a favorite design professor who could, after merely glancing at a drawing, pull down the perfect reference book to help develop the idea. If humans can infer design intent from sketches, maybe computers can, too. So reasoned Ellen Yi-Luen Do, (ellendo@u.washington.edu) now a professor at the University of Washington. For her recently completed doctoral dissertation from the Georgia Institute of Technology, she developed a prototype sketch environment in which the computer software recognizes drawn shapes, determines the drawing type, and interprets symbols to derive design intent. It then launches other software applications that perform reference searches or provide some analysis of the drawing.

For example, a certain configuration of lines can be construed to be a floor plan. If the architect draws a few arrows emanating from a point, Do's software infers that he or she is thinking about views within the plan. This launches a program called Isovist, which highlights the portion of the plan visible from the viewpoint, taking into consideration walls, windows, and partitions. The architect then continues designing without having to think about software mechanics.

Do's prototype, dubbed "The Right Tool at the Right Time," or RT^2, depends on a foundation of sketch recognition software which, like Isovist, was developed at the University of Colorado's Sundance Laboratory for Computing in Design and Planning. RT^2 can identify whether a drawing is a bubble diagram, floor plan, section, or 3-D view; it can recognize commonly understood symbols such as windows, walls, ground lines, sun angles, and numbers. In addition to Isovist, RT^2 can launch Archie, a library of post-occupancy evaluation case studies developed at Georgia Tech; the Great Buildings Collection from Artifice Inc, an encyclopedia of hundreds of famous buildings; a numeric calculator; and a geometric modeler that converts sketched rectilinear massing into a



In Scott Arvin's space-planning prototype, randomly positioned rooms undergo a series of simulations that pull them apart and push them together according to program requirements. In the final stage, the spaces are grouped in a viable floor plan with properly aligned exterior edges.



Ellen Yi-Luen Do, a professor at the University of Washington, developed reference software while pursuing her doctorate at the Georgia Institute of Technology. The Right Tool and the Right Time, dubbed RT^2, provides a sketch environment (bottom center) in which certain symbols automatically call up appropriate reference and simulation tools. Shown clockwise from the bottom left, the tools include a 3-D modeler; Archie, a library of post-occupancy evaluation case studies; a digital notebook in which the irregular sketch is translated into the equivalent, rectified figures; Isovist, for displaying a view analysis, and several images from the Great Buildings Collection.

3-D model that can then be turned and viewed from other perspectives. In theory, RT^2 can link to any number of support applications, Do says, including commercial design software such as AutoCAD or form*Z.

Hand-crafted digital models

Good news from Brazil for everyone who has ever felt like they had one hand tied behind their back when trying to manipulate 3-D forms with a 2-D drawing instrument. University of Brasilia architecture professor Edison Pratini (pratini@usp.br) is developing a program he calls 3-D SketchMaker. It relies on natural, expressive hand gestures for creating 3-D computer models, a process that removes the discontinuity between conceiving a form and translating it into a digital model. Pratini began the project as part of his dissertation at Pennsylvania State University's Department of Architecture and has since refined it.

NEW SOFTWARE RELIES ON NATURAL HAND GESTURES TO CREATE 3-D MODELS.

"Pointing devices [such as a mouse] and menus in existing software do not allow the freedom, quickness, and spontaneity needed to establish a continuous cycling of information between eye, brain, hand, and paper," Pratini says. He wanted to take advantage of the natural gestures used when describing the shape of objects. His first prototype relies on a 3-D mouse that transmits x, y, z data to the computer instead of the x,y data that's transmitted by a conventional mouse. The designer waves the 3-D mouse through space to create two curves or lines. The software translates one curve into a sectional profile and the other into a path. Then it creates a surface model of that profile being extruded along the path. The resulting rough model is further refined with normal 3-D modeling software.

A second version relies on a data glove containing numerous sensors that interpret finger position and movements in space. Gestures for describing cubes, spheres, and other shapes are translated into corresponding digital forms. They can also be edited in a similar fashion; opening the hand wider, for example, makes the form larger. Beyond creating primitive forms, it is easy to imagine this interface expanding to enable architects to literally mold their schematic designs.

Linking design and science

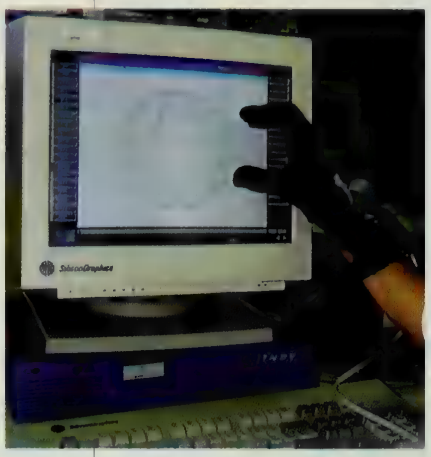
For decades, research scientists have been developing extremely sophisticated analysis tools to study the energy performance of buildings. These tools are typically unsuitable for architects, however, because the interface is cumbersome, the output is largely numeric, and the input requires mechanical engineering data that comes at the end of the architectural design process. To make simulation tools useful in schematic design, when important energy-related decisions about building form are made, Konstantinos Papamichael (k_papamichael@lbl.gov), of the Lawrence Berkeley National Laboratory at the University of California at Berkeley, created the Building Design Advisor (BDA). This software is close to becoming commercially available. A beta version can be downloaded from kmp.lbl.gov/BDA.

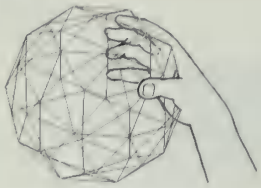
The BDA maintains graphic and numeric definitions of a building that is under design, and links the design data to various simulation tools, such as DOE-2 for energy performance calculation, Radiance for lighting calculation and rendering, and DElight for daylight and electric lighting analysis. (These three programs are in the public domain.) The input needed to run each of these programs is different, and the BDA makes the necessary translations.

In cases where a building's design is still sketchy, the BDA creates "smart defaults" to fill in the gaps of missing data. For example, it retrieves

performance data from the Department of Energy and ASHRAE to specify wall insulation levels even before the wall material has been selected. Thus, the architect can look at high-level performance evaluations even during schematic design. Moreover, the BDA supports different building assemblies simultaneously so that the architect can compare these configurations—wood studs placed at 16 or at 24 inches on center, for example.

The BDA sports its own Schematic Graphic Editor, which allows a designer to input and edit a simple sketch. But Papamichael expects very soon to replace this with links to commercially available object-oriented CAD systems, such as Autodesk's new Architectural Desktop. In the future, the BDA will link to any number of architectural applications, such as cost estimating, environmental impact analysis, and electronic product catalogs.

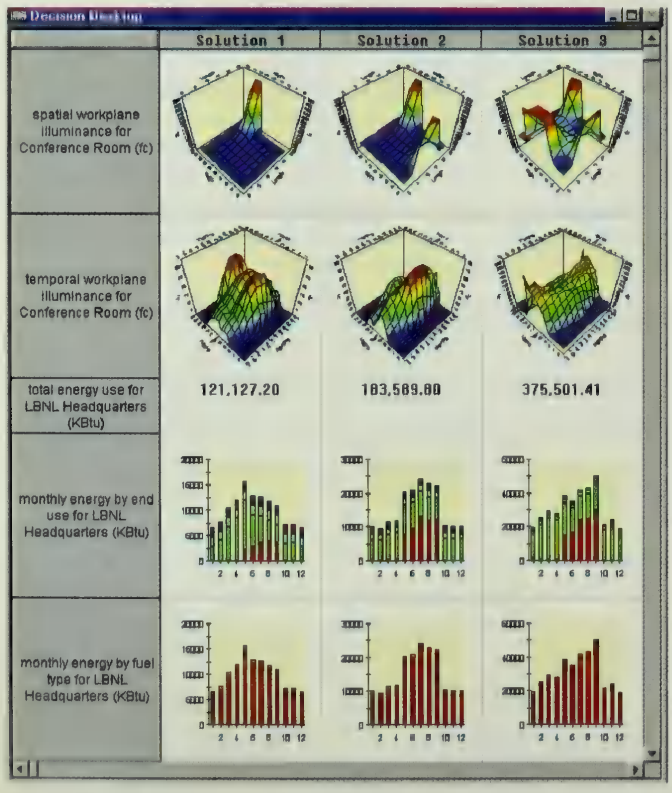




With Edison Pratini's 3-D SketchMaker, various forms, such as cubes and spheres, can be shaped by ordinary hand gestures with the help of a data glove. Once the basic forms are created, they can be combined and edited with conventional CAD modeling software.

Putting it all together

These four examples are isolated approaches to architectural design computing. Each demonstrates a narrowly focused capability that is desirable but missing from current practice. However, each prototype is founded in the belief—ubiquitous within academia, it seems—that the ultimate goal is to connect all tools of drawing, design, analysis, simulation, and visualization to a single, cohesive, complete model that contains everything that can be known about the building under design.



Konstantinos Papamichael's Building Design Advisor features three schematic building designs that are rated on each of five criteria. At a glance, the architect can evaluate the amount of daylight present throughout a space, on a daily basis, throughout the year. The program also portrays annual and monthly total energy consumption for each estimate.

Bringing these ideas into the commercial software market is made even more difficult by this singular approach, which represents a mismatch between the structure of the construction industry and what is needed for the single building model approach to be accepted, says Robert Aish (Robert.Aish@Bentley.com), a research scientist with software vendor Bentley Systems.

Fifteen years ago, Aish worked on an English design system called RUCAPS, which later came to the U.S. and was renamed Alias Sonata. The system allowed multiple users from all disciplines, or "enterprises," within the construction industry, to work on a single model with parametrically defined components. Drawings are generated from the model, thus guaranteeing their consistency.

Sonata was a commercial disappointment. One reason, Aish says, is that its concept of "enterprise computing" required a restructuring of teams within the industry. For example, it required more detailed input by architects for the benefit of the engineers and contractors downstream. But there was no motivation or compensation for the increased workload upstream. As a result, the now-familiar drafting systems that run on low-cost personal computers won over the U.S. market because drawing efficiency could be improved without requiring major readjustments in the way business is done.

Now software developers are joining academic researchers in calling for the professions to make these adjustments, revamping the relationships between architect, engineer, builder, and owner and rethinking how various players are compensated for their contributions. Until that happens, Aish says, Bentley is working on methods for easing the transition. Their new ProjectBank technology creates a central data repository that looks much like a traditional CAD environment, but is accessible to the entire team.

At the same time, software developers, including Bentley, are working with architectural and sociological researchers who study collaboration. Their goal is to understand the key social and technical barriers that have prevented a restructuring of the design-to-construction process. This time, Aish says, "we want to get both the technology and the business conditions correct—and correctly matched."

This adds an optimistic note to the story of architectural software research. With sufficiently powerful hardware and support software, all the clever research ideas—automating space planning, hand-crafting forms, calling up reference materials with sketches, and performing complex energy simulations early in design—will eventually become part of a practitioner's everyday toolkit. The obstacles may be many but the rewards are compelling. ■

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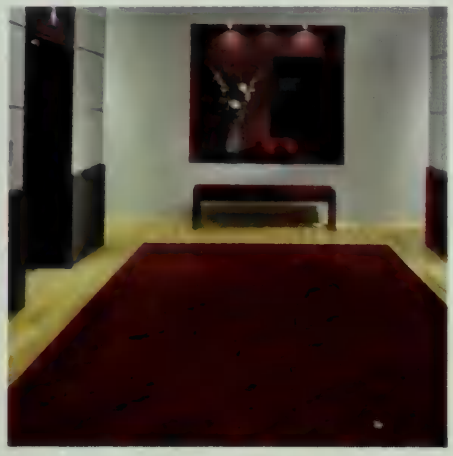

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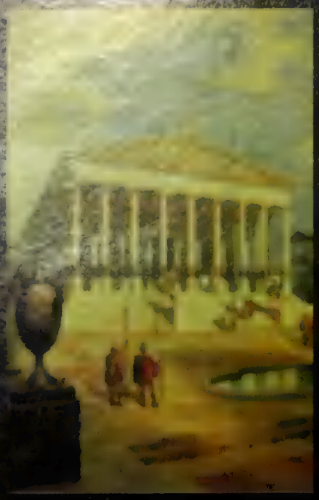

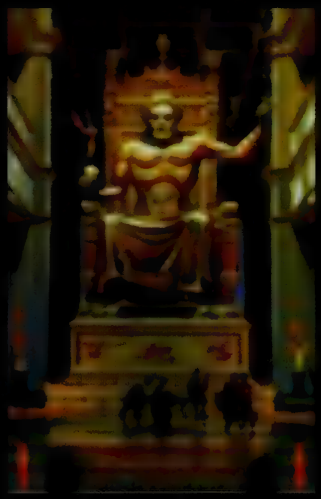

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TECHBRIEFS

NEW PHOTOVOLTAIC PRODUCTS ARE INTEGRATED INTO THE BUILDING SKIN

Architects are recognizing that buildings must be environmentally sound, as well as aesthetically appealing. And they are responding by specifying energy-efficient products, being cognizant of indoor-air-quality issues, and using sustainable design techniques. But it's not enough. Rather than use smaller amounts of nonrenewable fuels and create less pollution, designers must make buildings that rely completely on renewable resources to produce some and, eventually all, of their own energy without polluting.

Photovoltaic (PV) technology is a truly elegant means of producing electricity on-site, by directly harnessing energy from the sun. Developed in the early 1950s at Bell Laboratories to power space applications, PV systems convert sunlight into electricity silently, with no moving parts, no maintenance, no toxic emissions, and no depletion of resources.

PV systems located on individual buildings can displace utility power and help customers save money. On a broad scale, this approach also eliminates the need for more power-generating stations. And, of course, the environment benefits when power is generated from the sun.

Building-integrated PV (BIPV), where the PV elements actually become an integral part of the building skin, is a commercially viable reality. These systems, which provide electricity for the building where they are used, will achieve widespread use in the near future. In fact, Europe and Japan are already using them on a significant number of structures.

How photovoltaics work

A PV system starts with a collection of wafers made of silicon (or a similar semiconductive material) that are exposed to sunlight. Each wafer, called a solar cell, is roughly four-inches square. Wafers must be protected from moisture, wind, erosion, and other weathering factors by some type of transparent protective coating, often glass. The substrate can be a range of materials, including stainless steel, but glass is used most often for architectural applications.

The number of wafers or cells used is dictated by the building's energy requirements. A cluster of cells is configured in series to create a module, or panel. These modules are also wired in series to create an array. The number of modules used in the array is dictated by the building's energy requirements. To deliver maximum power, the array is positioned for optimal solar exposure.

Unlike in the past, when solar panels poked up from rooftops like slim, rectangular satellite dishes, the new building-integrated arrays not only offer an aesthetic improvement, but they are also forgiving in their solar orientation. Standard modules come in varying levels of power output and a range of sizes and shapes. They are often custom designed, however, to blend with a building's individual aesthetic character and meet its power-generating needs.

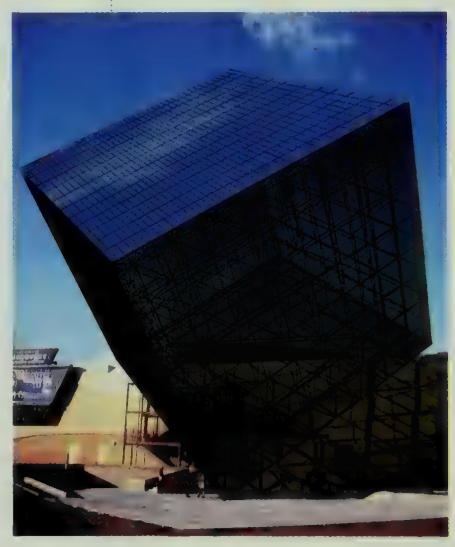
For example, at the Mont-Cenis Academy in Herne-Sodingen [page 219], the largest PV installation in Germany, the manufacturer of the PV panels, Pilkington Solar International in Cologne, Germany, packed the solar cells on the roof-mounted panels in varying densities. Too many wafers crowded onto the clear-glass substrate would have blocked the sun from entering the space below. Fuel cells packed in densities ranging from about 50 percent to 85 percent were used to create a dappled effect in the building, as if wispy clouds were moving through. Panel colors range from blue to purple to charcoal gray, depending on the specifications.

The power that's produced is direct current. It's converted to alternating current with an inverter, typically located in the electrical equipment room. Power is fed into the building electrical system at that point.

Some systems include a storage medium, often lead-acid batteries, which provides power at night, when there is insufficient sunlight, or when backup power is required. But more often the building is connected to the local electrical utility grid. These so-called utility-interactive projects draw power during low-light times and feed surplus power back at other times.

New products

PV manufacturers have finally realized that their standard product, the 24-by-48-inch shiny gray panel with an extruded aluminum frame, is of little interest to architects. Few designers ever really knew how to place these ungainly looking modules on buildings without destroying their appearance.



The curved roof at the Environmental Sciences Building (top left) in Oberlin, Ohio, by William McDonough + Partners, will hold PV modules. The topmost gray surface in this rendering of the Discovery Science Center in Santa Ana, Calif. (above), by Arquitectonica, is a thin-film PV array.

A number of companies now offer PV products specifically designed as building materials, some of which incorporate a new and promising manufacturing approach called thin-film PV. While

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PV cells are discrete pieces that must be manufactured individually, thin-film technology uses a process similar to vacuum deposition (used for applying coatings on high-performance glass) in which thin layers of semiconductive materials are applied to sheets of glass in a single operation. This quick and easy manufacturing approach saves money without sacrificing the efficiency of the PV system. In general terms, a building product that uses thin-film technology will have an added cost of $25 per square foot. By comparison, conventional cell panels add about $50 per square foot to the cost of a product or material.

For example, BP Solarex offers a new thin-film PV used on semi-transparent glazing, displacing conventional facade, skylight, or atrium glazing. Other manufacturers are experimenting with thin-film products for 2000.

Curtain-wall manufacturer Kawneer's Power Wall is a pre-engineered facade and sloped-wall glazing system that incorporates conventional cell panels. The company is also developing facade-integrated PV sunshades, which contain the panels on the top surface of the shades. This product is so new, no prices have been set.

Viracon is working on BIPV glazing systems that provide thermal- and cooling-load control, such as conventional high-performance architectural glass. United Solar Systems offers BIPV roofing products that replace conventional standing-seam metal roofing or asphalt shingles. Solar Building Systems now has glass-over-concrete BIPV roof tiles, called SunSlates, for steep-slope construction.

PV specialists from at least 15 countries are working with the International Energy Agency, a quasi-governmental organization under the auspices of the United Nations, on a five-year effort to optimize and promote the use of solar building materials. Meanwhile, architects throughout Europe and Japan are exploring creative ways of incorporating them into their designs.

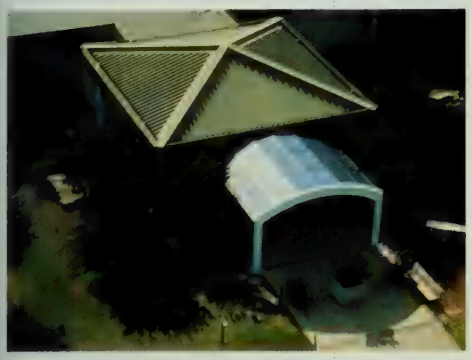
At the Environmental Science Laboratory in Albany, N.Y., Cannon Architects incorporated PVs into the operable sunshades. The panels line the tops of the sunshades, which rotate according to light conditions and season.

Motivated by strong support from clients, the public, and their governments, the Japanese and Europeans, the Swiss and the Germans in particular, have installed thousands of BIPV systems on commercial and residential projects and are monitoring performance to further refine design and installation practices.

The Japanese, for example, are focusing on installing residential and commercial roof systems that have integral PV components. In Japan, PV is not at all a new and unfamiliar technology. By encouraging the use of these rooftop systems, the Japanese government reasons, it is nurturing a domestic industry and creating a new source of power. U.S. architects

TECH BRIEFS

are completing some pioneering applications for BIPV systems for roofs, facades, sloped glazing, and sunshades. Cannon Architects, in Buffalo, N.Y., created a future-oriented design for the new Environmental Science Laboratory



The Olympic Natatorium in Atlanta, by Rosser Fabrap, features a solar canopy over the entry, as well as PV modules on the main roof. The PV system was designed by Solar Design Associates.

at the State University of New York at Albany. The building incorporates operable sunshades, which move according to the amount of light that hits them, topped with PV modules. There is also a PV entry canopy on the south facade.

New York City-based Fox & Fowle Architects incorporated BIPV as spandrel glass in its new, sustainably designed high-rise at 4 Times Square in New York City. Hellmuth, Obata & Kassabaum's St. Louis office, working with Somerville Architects of Green Bay, Wis., used BP Solarex's semitransparent thin-film PV in the atrium of the New Academic Facility at the University of Wisconsin in Green Bay. And William McDonough + Partners of Charlottesville, Va., specified a roof-top PV system in the new Environmental Sciences Building at Oberlin College in Oberlin, Ohio.

New motivation

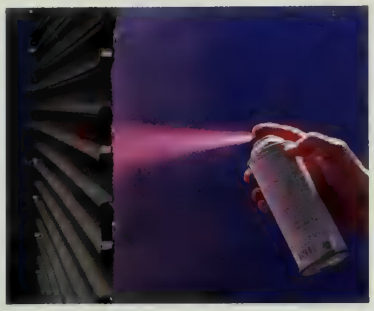
Two attractive federal tax incentives encourage private investment in solar-energy equipment and systems. A 10 percent credit and a five-year accelerated depreciation option are available. A number of states also offer incentives. California, one of the most generous states, has a renewable energy fund that provides up to $3 per peak watt to help buy down BIPV-system costs. (A peak watt is the uniform measurement for how much power a given solar module will produce under ideal conditions—with full sunlight shining perpendicular to it.)

These incentives can amount to a 42 percent reduction in the cost of the PV system. And, in all BIPV applications where the solar components displace conventional building materials, the cost of these conventional materials and the labor to install them can be applied to the BIPV budget.

The best motivation for incorporating BIPV may be the financial savings for occupants, owners, and local utilities. But these systems provide a highly visible and attractive public statement about the building owner's environmental commitment, as well. *Steven Strong*

Steven Strong is an architect and president of Solar Design Associates in Harvard, Mass.

AIA WORKSHOP: GOING SOLAR The AIA is offering full- and half-day workshops for architects that provide an overview of building-integrated photovoltaic systems, including descriptions of the system components and many examples of solar-electric architecture. The workshop is hosted by regional AIA chapters and qualifies for health, safety, and welfare continuing-education credits. For information, contact Solar Design Associates at 978/456-6855.



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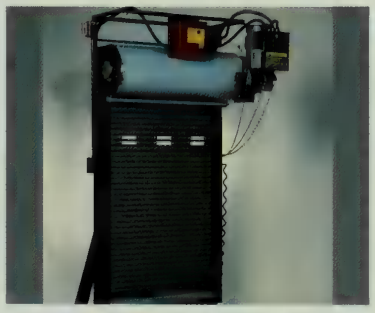

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continued from page 46

BIOGRAPHIES OF MILLENNIUM ARCHITECTS

Asymptote Architecture

New York City, established 1989

Lise Anne Couture and Hani Rashid

For MArch degrees, Couture went to Yale and Rashid went to Cranbrook. Couture teaches at Parsons School of Design and at Columbia, where Rashid is an associate professor. Their work will be in the Venice Biennale next June and at the Pompidou Center in Paris in 2001.

Guthrie + Buresh

Los Angeles, established 1988

Tom Guthrie and Danelle Buresh

Buresh received an MArch from UCLA, and Guthrie received her BA and MArch from UC Berkeley. Both teach at SCI-Arc and have lectured or been visiting critics at architecture schools in the U.S. and abroad. Their work was exhibited recently in the "Unprivate House" at the Museum of Modern Art.

Hariri & Hariri

New York City, established 1986

Gisue Hariri and Mojgan Hariri

The Sisters Hariri received BArch degrees from Cornell where Mojgan also earned an MArch. Gisue has taught at Columbia and been a visiting critic at Cornell, McGill University, and Parsons. Their work has earned national AIA awards and appeared in the professional and popular press. They were included in MoMA's "Unprivate House."

Kolatan/Mac Donald Studio

New York City, established 1989

Sulan Kolatan and William Mac Donald

Both Kolatan and Mac Donald received an MS in architecture and building design from Columbia, where they now teach and where Mac Donald is director of the MS program in architecture and building design. Their design for an apartment was in MoMA's "Unprivate House."

Krueck and Sexton

Chicago, established 1991

Ronald Krueck, FAIA, and Mark Sexton, AIA

Krueck and Sexton, who have worked together since 1980, received BArch degrees from IIT, where both have taught. Their work is in "Material Evidence: Chicago Architecture at 2000," opening this month at the Museum of Contemporary Art in Chicago.

Greg Lynn FORM

Venice, Calif., established 1994

Greg Lynn

Lynn graduated from Miami University in Ohio with BAs in philosophy and environmental design, before earning an MArch at Princeton. He is a professor at ETH in Zurich and will be the Davenport Professor at Yale for the years 2000 and 2001, as well as a visiting professor at UCLA. He is author of *Animate Form* and *Folds, Bodies & Blobs*.

Mockbee/Coker Architects

Memphis, established 1987

Coleman Coker and Samuel Mockbee

Coker received an MFA from the Memphis College of Art before becoming a registered architect in 1982. Mockbee earned a BArch from Auburn University. Mockbee/Coker's AIA award-winning work has appeared in numerous publications, including RECORD HOUSES (1992 and 1997).

Reiser + Umemoto

New York City, established 1986

Jesse Reiser, AIA, and Nanako Umemoto

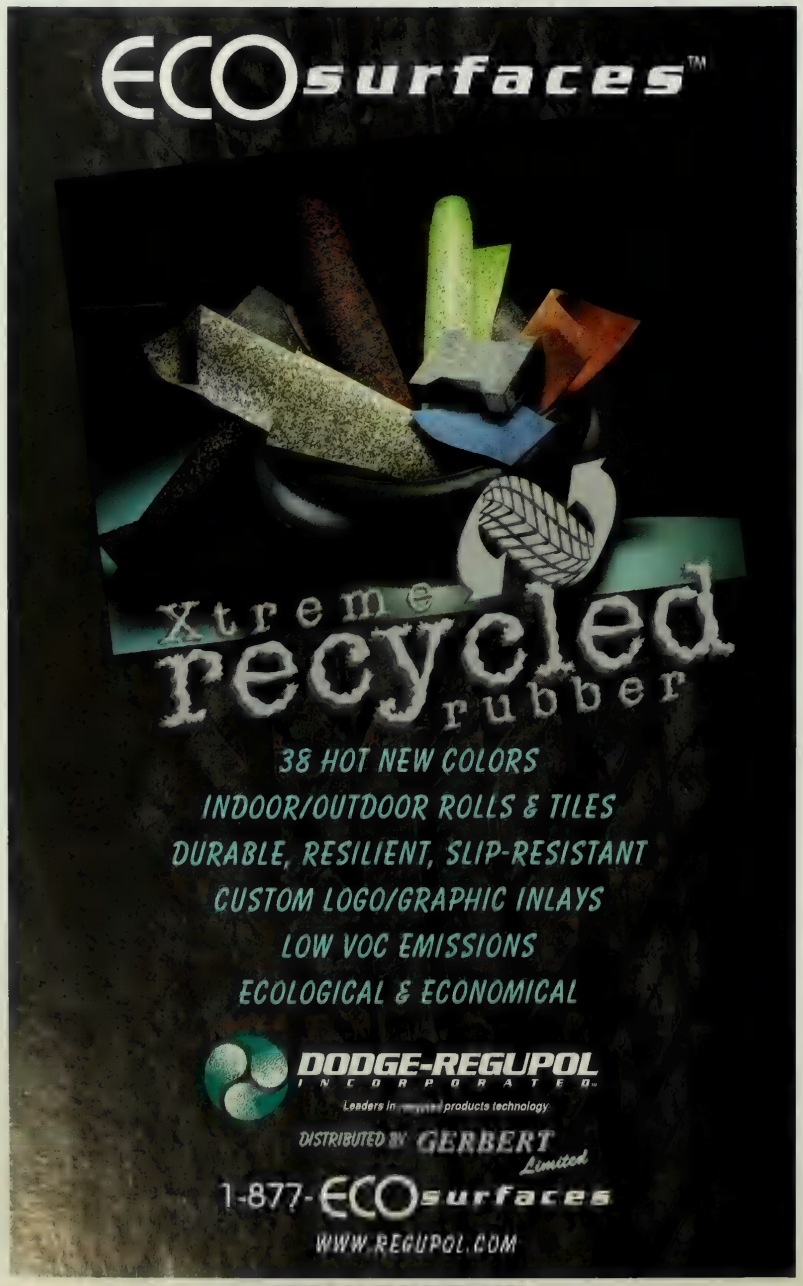
Reiser, a former fellow of the American Academy in Rome, completed his MArch at Cranbrook, while Umemoto received a BArch from Cooper Union after studying urban design at the Osaka University of Art. In 1999, the firm was a runner-up in the West Side competition sponsored by the Canadian Centre for Architecture and received the Daimler/Chrysler Award for excellence in design.

Michael Sorkin Studio

New York City, established 1977

Michael Sorkin

Sorkin, who received architectural training at Harvard and MIT, is a contributing editor for RECORD and has written and edited several books, including *Variations on a Theme Park* and *Exquisite Corpse*. He has been both a Davenport and a Bishop professor at Yale and has taught for 10 years at The Cooper Union. He is director of the Institute of Urbanism at the Academy of Fine Arts in Vienna. ■



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Celebrating THE MILLENNIUM

Special Section

Products are intergral to the realization of architectural design. On the following pages, architectural product and material manufacturers celebrate and share their products, plans and visions for the 21st century with *Architectural Record* readers.

Every designer has old standbys. Ideas that have worked for you in the past. Ideas that are always there to fall back on, like trusted friends.

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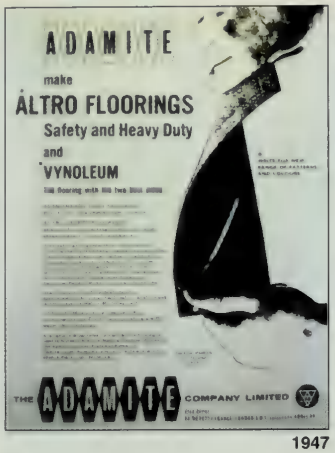

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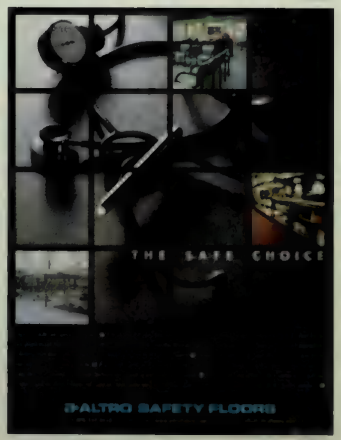

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Blueline Online Recasts Reel Grobman as "The Internet Architect".

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Why are the world's leading architecture and design firms turning to Blueline Online's ProjectNet? Here Ken Grobman, president of Reel Grobman & Associates, Inc., a leading architectural interior design firm in San Jose, CA, addresses this question. Reel Grobman has been using ProjectNet for over a year and a half to manage projects for top technology companies.

Q. Being known as the "Internet Architect" gives you a competitive advantage. Why?

KG: When I saw our clients' enthusiasm for our use of Web technology, I knew the benefits went far beyond saving money and streamlining workflow. I saw a compelling competitive advantage with ProjectNet. We can offer clients easy, real-time access to information – even CAD drawings from anywhere at anytime.

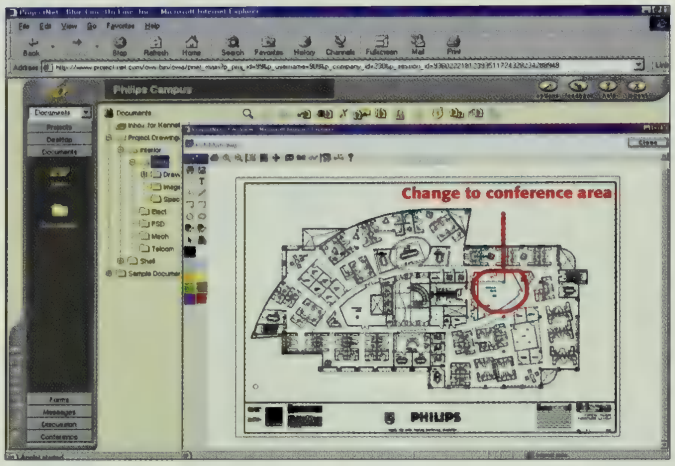
ProjectNet user, Ken Grobman of Reel Grobman & Associates, Inc.

When I give them an online demonstration right on their own computer, without software or plug-ins, and they quickly see a marked up CAD drawing, their eyes get big. They're hooked. They see the benefits immediately. Benefits like faster turn-around and approval times, lower print and delivery costs, no waiting. It's fantastic.

Of course design reputation and portfolio are always key, but today, clients want to know how smart you work and that you're sensitive to their bottom line.

Q. Exactly how does ProjectNet accelerate your projects?

KG: Across the globe, the key to success is completing projects better and faster. In our industry, the single biggest hurdle I see is timely communication. The Web is a great enabler. But to truly leverage its power, you still need ProjectNet.



The Philips Campus was just one of Reel Grobman's ProjectNet projects. ProjectNet lets you view and mark up drawings online, without software or plugins.

ProjectNet drawings, X-references and supporting documents are linked and stored in one place, accessible by everyone who needs them, anytime, from anywhere. It eliminates errors arising from working off different versions and saves money by greatly reducing the need for faxes and express mail. You know your London office and your client in Houston, the consultant on the road, and the contractors on the job site are all working off the same revision at the same time, and as soon as it is available.

Q. What about security? If ProjectNet is so accessible, how can you control who sees what?

A very simple administrative process allows you to assign specific types of access to each person and document. You have complete control. ProjectNet is like one big smart file cabinet with all project communication in one secure place. It even dates and time-stamps everything so you have an audit trail of who did what when.

Q. Any advice to firms considering a Web-based project management service?

KG: In addition to technology, features and price, go with a company you expect to be around five years from now–one that will not just maintain their service but continually innovate. For a long time, the industry resisted CAD but eventually it became ubiquitous. In the not too distant future, we believe ProjectNet will become an industry standard, too.

To contact Blueline Online, call 1-888-256-5411 or go to www.bluelineonline.com.

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Davis/Muller Lighting

Decorative Lighting For Architectural Interiors

Founded by two of the industry's most respected and prolific industrial designers, Davis/Muller Lighting has quickly become a trendsetter in the specification-grade decorative lighting market. Focused on fresh interpretations of classic design motifs, Davis/Muller fixture styles are carefully developed to provide the perfect complement to numerous architectural and interior design themes. Unmistakable quality in materials and construction in combination with an extensive selection of sizes, lamping options, and materials are making Davis/Muller the preferred lighting source for interior designers and architects alike.

A Winning Team

Davis/Muller's distinctive style is the product of the unique partnership between designers Scott Davis and Henry Muller. Both designers have dedicated their entire careers to the lighting industry, creating designs for some of its most successful and prestigious manufacturers. Scott Davis is an American-born and educated designer and recognized authority on Art Deco and 20th Century design. He has held the position of Director of Design for several major lighting manufacturers specializing in high performance architectural lighting. In addition to the many innovative designs he has created, he has also successfully served as President of another premier manufacturer of architectural lighting fixtures for over 10 years. Henry Muller is a Swiss-born and educated designer who now resides in the U.S. He has dedicated nearly 40 years to the design of decorative residential and architectural lighting fixtures. Working as the Director of Design for one of the world's largest and most popular lighting manufacturers, Henry's countless designs have probably influenced the lighting industry more than those of any other designer. His work has been published many times and he is an accomplished educator in the lighting field. All Davis/Muller designs are the product of a collaborative effort between these two uniquely experienced designers.

More Than A Product Line...It's A System

The entire Davis/Muller catalog is based on a three-tiered system of product design that allows the specifier to consider varying levels of decorative complexity while maintaining consistent proportional and performance characteristics. Using materials and design elements that recur throughout the line, this unique system also allows for "mixing and matching" with confidence that there is sufficient commonality among all fixtures; thus providing an appropriate aesthetic continuity when used in virtually any combination. The broadest range of sizes, lamping options, accessories and finishes available ensure the right fit in almost any application from a powder room to a ballroom.

A Solid Value

Davis/Muller's designers and craftsmen know that nothing renders form so crisply, takes a finish so richly, and endures so permanently as solid brass. That's why we use it (and lots of it) on virtually every fixture we make. Other fine quality materials such as natural quarried alabaster, heavy cast glass, pure virgin acrylic, die-cast aluminum alloy and stainless steel are also used extensively to create products of enduring value.

True Manufacturers

Unlike many "manufacturers" who are actually just buying stock parts and assembling them, Davis/Muller is a true manufacturer, boasting an impressive array of sophisticated machinery and a sizable staff of skilled craftsmen. Virtually all components, down to the smallest knob and canopy are of proprietary design and production. This resource affords us (and the specifier) the highest level of quality control and customization capabilities. Benefiting in so many ways from our location in the heart of America's jewelry manufacturing capital, Davis/Muller is truly producing the "jewels" of the lighting industry.

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Fypon Molded Millwork™, provides the ideal alternative to decorative wood elements such as entrance systems, window and door trim and molding. Constructed of high-density polymer, Fypon offers the charm and elegance of wood, but is virtually maintenance-free, will not rot and is insect resistant, providing years of beauty and performance.
With over 4000 items available, Fypon allows outstanding design flexibility in creating an architectural effect that is authentic and distinguished.

FINISHES

Fypon Molded Millwork™, requires finishing with high quality exterior paint. Products are delivered primed.

MOLDINGS

With over 220 molding profiles, available in 16' lengths, Fypon provides the ideal solution to tie all architectural elements together. Fypon offers crown, dentil fascia, cornice, leaf, step, board, and cove moldings, in a wide range of heights and projections, to meet the exacting demands of any project.

BALUSTRADE SYSTEMS

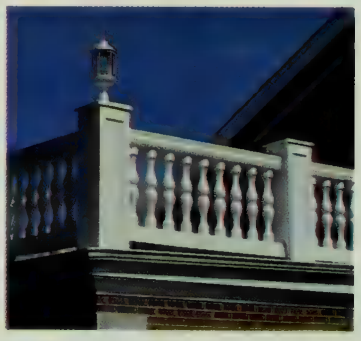
Fypon balustrade systems combine elegance and classic styling with superior strength and stability. The high density polymer exterior is cast around galvanized steel pipe in the balusters, galvanized steel pipes or heavy duty vinyl pipes in top and bottom railings and heavy duty vinyl pipes in newl posts. Fypon offers balusters in a broad range of styles and details.

COLUMNS

Fypon's round and box columns provide complete architectural distinction. The loadbearing columns are constructed of galvanized steel pipe encased in high-density polymer. The columns offer a maximum safe load of 12,000 lb.

WINDOW/DOOR TRIM

Fypon's wide selection of window heads, panels and trim, arch surrounds, half circles, segments, shutters, and elliptical arches add the perfect architectural accent to any exterior.



Looking Ahead: Partnership in the 21st Century

The past one hundred years were an amazing time of change for the American housing industry. With the new millenium officially beginning on January 1, 2001, you can look forward to another one hundred years of change.

How will we live in the new Millennium? We're already starting to see glimpses of what home and life will be like. The resurgence of housing styles and neighborhoods modeled on traditional, mixed-use neighborhoods built earlier this century, where comfortable housing is combined with commercial conveniences, is a growing trend that's predicted to grow stronger. This type of development is possible because of a strong partnership between homeowners who tell builders what they want, responsive builders who find architects, like you, to design these dream neighborhoods, and a strong distribution channel that provides the products appropriate for the period architecture. This unique partnership is a result of architects focused on residential design, an increasingly competitive construction industry, and a savvy home buying public.

Why are buyers turning to new homes with the look of old? They want a sense of comfort and familiarity mixed with modern-day conveniences. They are asking for homes with a higher level of detail—similar to the original versions of these retro homes—and that's fueling a resurgence of "purist" components.

Wood stile and rail entry doors, like those available from Morgan and Nord, will see growing demand, not only because they have the intricate detailing only wood can deliver, but because with engineering breakthroughs such as veneer panels, performance concerns associated with old-style doors are eliminated. And architectural features of these homes, such as covered porches and porticos, protect the beauty and integrity of fine wood doors for many years of use. Inside the home, real wood stile and rail doors add authenticity and sound-control and coordinate with wood mouldings.

However, these buyers aren't completely mired in tradition. Homeowners thrive on the perception of personalization—be it a truly custom home or one from a production builder that allows customization—and they want to continue to be able to express themselves through their homes. The fact that it looks like it's from an earlier century doesn't mean it isn't designed for the one to come. Homeowners will increasingly choose wood windows clad in cool colors like those from Pozzi Wood Windows, which offers a choice of 27 shades. Others will insist on one-of-a-kind entry doors from IWP, whose offerings include a series of exotic doors designed by artist Shelley Jurs.

Products modeled after popular European designs continue to influence the home buying public. The Euro trend appeals to people looking for an alternative to the quintessential American, six-panel door, leading them to elegant, arched panel designs. And this trend helped the radiant floor heating market gain widespread acceptance and pushed manufacturers to further innovate. One company, Warmboard, offers a radiant heating system with tubing embedded directly into a special composite wood subflooring.

Building products that are both efficient and perceived as a luxury will find a captive audience among 21st century homeowners, architects, builders, and suppliers.

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Kim Lighting
Outdoor Architectural Lighting
67 Years of Innovation

Kim Lighting has a rich culture founded on innovation. Established in 1933 by F.B. Nightingale, Kim has maintained a culture of continuous innovation. Nightingale fathered many of the landscape lighting techniques in use today. His concealed-source approach to garden lighting led to the creation of new fixture designs and applications. Moonlighting, Birdhouse fixtures, and In-grade Up-lighting are just a few Nightingale inventions still in use today; many remain in the Kim catalog.

In 1952, at the age of 67, F.B. Nightingale retired, selling the Kim Manufacturing Company to his daughter Nancy, and son-in-law Bill Eppard. By 1955, Kim was the leading manufacturer of Landscape Lighting.

In 1963, building on the success of its in-grade lighting fixtures, Kim introduced the first direct-burial landscape light. This was the first ever completely sealed up-light and included a separately encapsulated electrical and optical compartment.

Throughout the 1960's, Kim innovated luminous body products. Modern designs included incorporation of graphics, as well as integrated pole designs. During this time, Kim continued to expand its landscape offering to include cast components in bronze and aluminum.

In 1971 Kim was one of the first to introduce a square pole-mounted area luminaire (shoebox). Incorporating extruded aluminum components, a robust lens seal, and cutoff optics; the simple devices changed how architectural sites are illuminated.

In 1979, Kim developed the first recessed wall mounted floodlight. Called the LLF, the combination of a high performance optic into a compact housing produced a potent package. This innovative product provides area, stair, and path illumination from mounting heights as low as 24 inches.

In 1986, Kim invented the Architectural Floodlight. Combining aesthetic detailing, die-cast construction, and fabricated optical systems, the AFL series was the first to address the special needs of architectural facade illumination. Today, the AFL series includes over 21 optical distributions.

In 1988, Kim entered the parking garage market, with the PGL. This innovative product combines asymmetric indirect illumination with cutoff wide down-light distribution, to revolutionize how parking structures are illuminated.

In 1989, Kim re-addressed area lighting. Combining industrial and architectural design aesthetics, die cast construction, fabricated optical systems, and the first sealed optical chamber, the Archetype® revolutionized area lighting.

In 1998 Kim introduced its latest in-grade luminaire, the Lightvault®. Built on over 30 years experience in landscape product design, the LTV series provides the widest range of optical choices in the industry. Using heavy-wall composite bodies, with bronze trims and large stainless steel fasteners, the Lightvault is backed by a 25/7 year limited warranty. In 1999, the line has been expanded further to include solid bronze bodies, covered by a 25 year limited warranty.

1998 saw the introduction of Kim's newest landscape products, the Ravenna™ and Scarab™. The Ravenna combines organic design with MR16 halogen lamps for a completely new path/accent approach. Scarab, available in die-cast brass or die cast aluminum, is a complete family for MR16, PAR20, PAR30 and PAR38 lamps.

1999 has seen the introduction of Kim's latest area luminaire, the Era™. Incorporating the international style with Kim's well-proven optical systems, Era includes the integration of complementary pole designs.

Today, Kim is known throughout the world as the premier designer and manufacturer of quality, high performance, architecturally relevant, outdoor lighting solutions. Kim now occupies more than 400,000-sq. ft. of factory space in the City of Industry, Ontario, and La Mirada, California, and employs over 600 people. Kim owes a great deal of its success to the core values established by F.B. Nightingale; innovate, educate, and never compromise quality.

Kim Lighting
Contact: Kevin L. Willmorth - Director of Marketing
16555 East Gale Avenue
City of Industry, CA 91745
626/968-5666
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www.kimlighting.com

The Art and Science of Light

Presc•lite

For all we know about light, or think we do, the very definition of light involves a dichotomy. Ask two scientists and you can get two answers, wave or particle. The application of light, ironically, is similar in that depending upon whom you ask, it too, is either science or art.

As a company, Prescolite has created a unique position in the industry in its sensitivity and handling of the merging of these two elements of lighting: science and art. The basic foundation of this merging is a unique design philosophy and an innovative design process. The fundamental design philosophy is that a lighting fixture should not be approached as a specific product design problem, but instead as a building systems component problem. The design process, innovated by Prescolite, is ISD or Integrated Systems Design.

Historically, lighting fixture, lamp, ballast, and control manufacturers have designed their products in a vacuum – each designing their part as a separate product. This has resulted in a multitude of compatibility problems affecting installed performance. For example, a reflector poorly designed for a lamp creates a heat environment that causes color shift, or induces premature failure. Compatibility of controls and ballasts is another industry wide problem regularly commented on by professional designers.

Prescolite's ISD program starts by realizing that the reflector is part of a system that includes lamp, ballast, and switch (or occupancy sensor or dimmer). It is a rigorous approach that fundamentally includes the most significant component of a building design - the user. For Prescolite, the inhabitants of a space must be an integral part of the component product design itself. This approach has had practical impact. As an example, Prescolite's patented Virtual Source® reflector geometry introduced ergonomics into recessed downlighting - an industry first. Virtual Source reflector systems have higher efficiency between 0° - 40° (science) and higher VCP's (art) for greater viewer comfort.

Going into the next century, Prescolite has as a central vision, bringing meaningful innovation to the market, using its ISD program to assure that keeping up with the velocity of technological change doesn't create undue risk for the designer, and that its product designs maintain their unique architectural relevance. Prescolite's new Phos™ surface mounted downlights and collection of European styled, custom, and classic track products are testaments to this philosophy.

Prescolite's advertising slogan is "A New Quality of Light." For many companies, an advertising slogan is just that. At Prescolite, we see this slogan as a corporate vision, a promise to the architectural and lighting design community. With our significant growth over the last five years, we enter the new century with a well tuned balance between the legacy of innovation from our fifty-six year history, and the promise and enthusiasm that a young, energetic management team brings with its passion for light - and its understanding of both the art and science of light.

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Lehigh Portland Cement Company has served the construction industry in North America for more than 100 years as a producer of high quality portland and specialty cements and concrete products. Portland cement is the key ingredient of concrete, and concrete is one of the most environmentally friendly and most widely used building materials on earth. Professional architects, engineers, general contractors and design-build teams have come to rely on this uniquely versatile construction material that turns dreams into realities and has been responsible for building America's highways, dams, bridges, monuments, hospitals, schools, office buildings, and homes. Lehigh is proud to have played a role with you, our customers, in the building of America. As we begin this new era, we are well prepared to continue to provide world class products and services to you in *Working Together To Build Our Communities.™*

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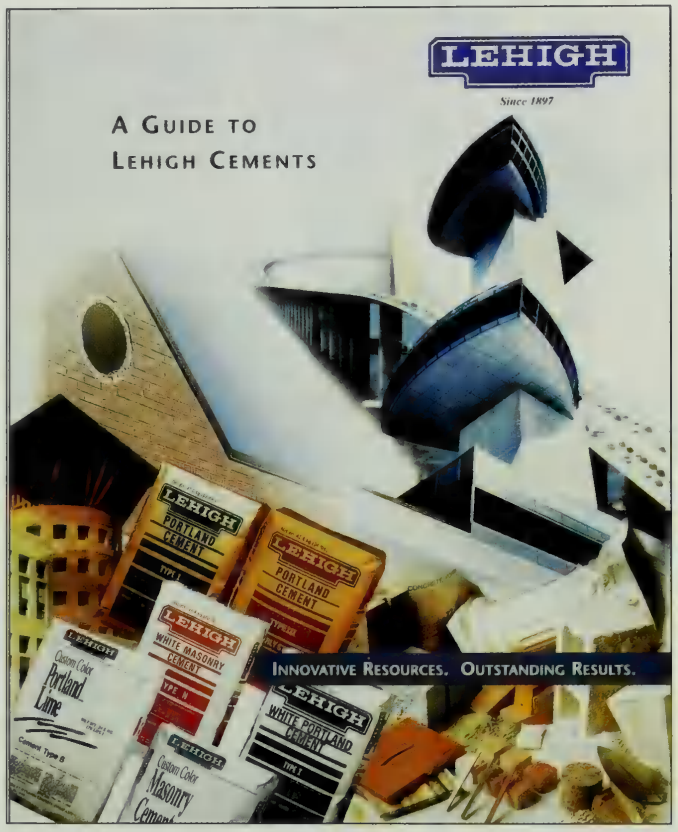

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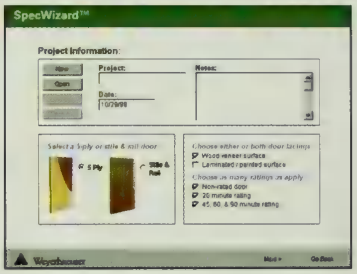

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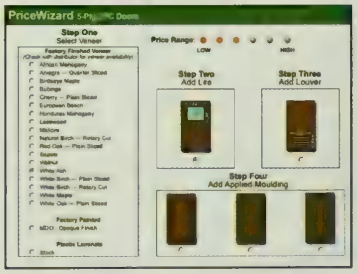

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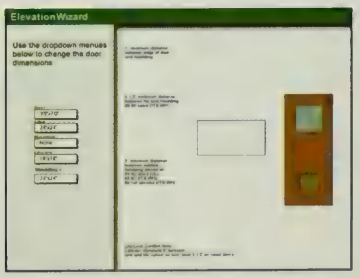

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Weyerhaeuser

ZERO INTERNATIONAL
ZERO'S POPULAR ACOUSTICAL DOOR SEAL EARNS CASED-OPENING FIRE RATING

Zero International's Model # 770 acoustical head-and-jamb door gasket provides highest-quality engineering, design features and performance that have made it the long-time favorite of acoustical engineers and specifiers alike. Secured directly to the door jamb, the gasket forms a tight seal of compressed, sound-absorbing neoprene as the door is closed. Zero's unique Compress-O-Matic® design allows optimal adjustment under field conditions for unsurpassed preservation of a door's sound ratings. Using the # 770 with a metal cased-opening frame eliminates the need for an additional frame stop, thus minimizing the undesirable projection into the door opening.

For the first time, specifiers can now achieve the same cased-opening profile and acoustical performance for all sound-rated openings – including those in fire-rated walls. Successful testing with Underwriters Laboratories (UL) has resulted in a fire rating for the Model # 770 acoustical gasket for cased openings. The new listing allows the # 770 to be used with both wood and metal acoustical doors with fire listings for durations ranging from 20 to 90 minutes under both negative and the new positive-pressure testing standards. Both single 4'0" x 8'0" fire doors and 4'0" x 8'0" pairs are eligible. Zero will supply gaskets with aluminum, painted steel or stainless steel housings as required for the specific door configuration, construction and listing. As with door function, fire-rated hardware applications for assemblies using the # 770 are limited only by the door manufacturers' listings.

Zero is also licensing procedures to frame manufacturers for testing the gasket on wood and metal doors with UL sound and fire ratings. That license authorizes UL to release Zero's procedures to qualified manufacturers, allowing them to update their fire test procedures in a manner that preserves both ratings.

The # 770 head-and-jamb gasket can be configured as a system with other Zero sound seals to achieve up to a 52 Sound Transmission Class (STC) rating when used with similarly rated sound doors. That high-level rating means that loud sounds emitted on one side of a door will be not be heard, or only faintly, on the other side.

The 52 STC rating can be achieved using Zero's "High Sound" automatic door bottom (Model # 367) featuring a patented design, which automatically presses down double neoprene acoustical seals as the door closes. The door bottom is combined with a Model #564 door saddle fitted with a neoprene bulb that forms an additional seal against the door. Additional head and jamb protection is provided in this configuration by the Model #119W spring seal, which is mounted to the frame (on top and at the sides) and to the door (at the bottom) and compresses with a spring action as the door is closed.

Zero's most recent listings cap a long industry of industry "firsts," including the first door gasketing suitable for soundproofing; the first integrated sealing systems, as an alternative to individual components; the first intumescent material designed specifically for doors; and the first Fire and Smoke Control systems for positive-pressure ratings. Zero offers a full line of specialized components and integrated systems for blocking flames, smoke, air, light and sound. All are engineered for quality, performance and durability.

For more information, contact: Zero International,
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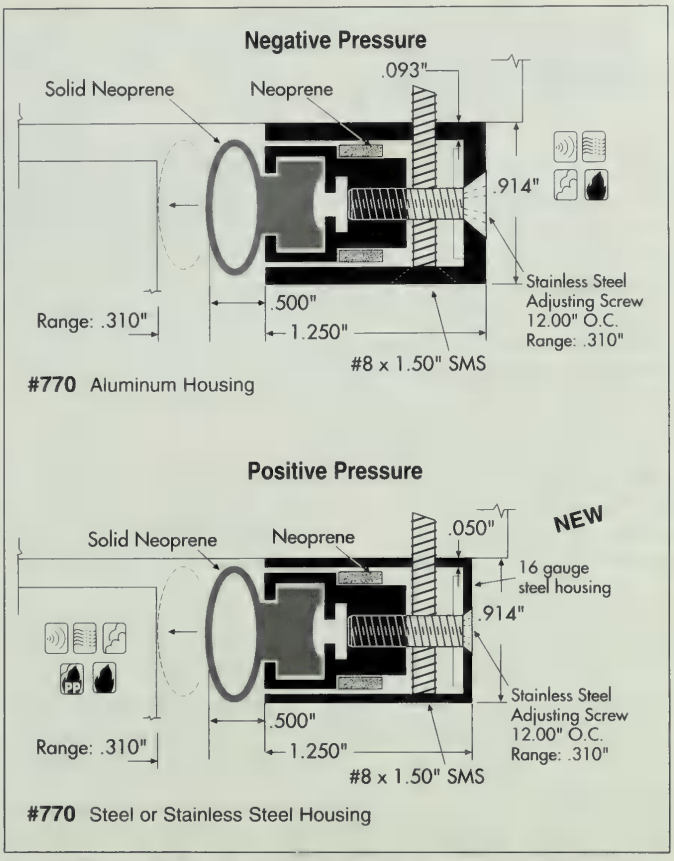

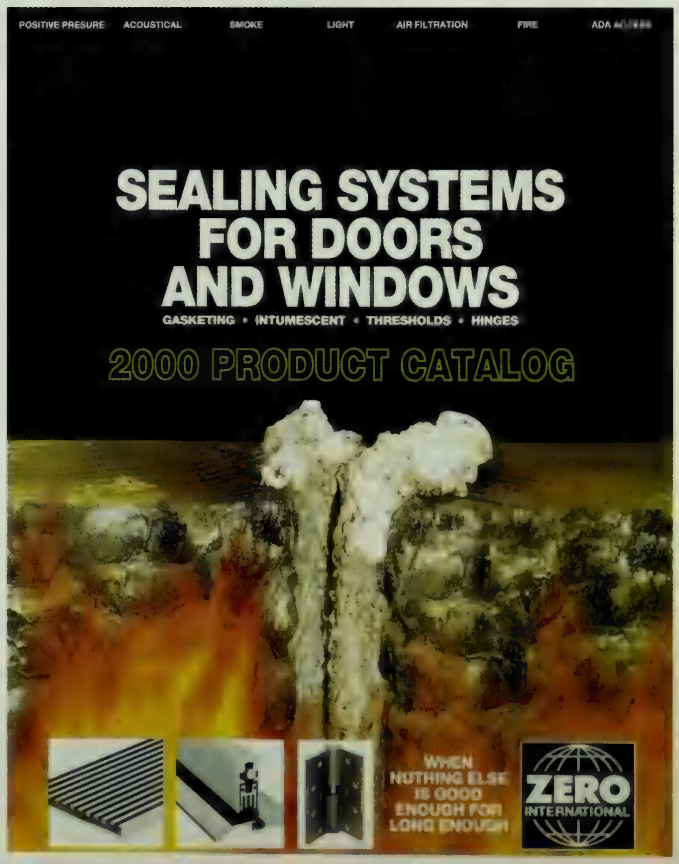

READER SERVICE NUMBER 121

Artemide
modern classic

Yes!! - Time to take out your old bell bottoms and mini skirts and revisit the birth of Italian modern industrial design and Artemide, as one of the driving forces behind its formation. Artemide's **Modern Classics** collection will take you on a pleasant journey, reminiscing the years when it all started - when Milan, with architects such as Magistretti, Mangiarotti, Ponti and Aulenti became the birthplace and the cradle of the now unstoppable Italian design movement. Artemide, being one of the leading companies in Italian design and coinciding with its fortieth birthday, proposes eighteen of its first luminaires from the sixties and seventies which have been put back into production, faithfully following the original handcrafted manufacturing processes.

Like any other living being, even for a company reaching a threshold of maturity, particularly when it coincides with the end of a millennium and the passage into a new age, there is a moment of reflection to review one's roots and to take stock of the present before plunging with renewed vigor into the future.

On the threshold of the year two thousand, for a company manufacturing objects/lights and new lighting systems, there is a strong incentive to take up the challenge of the innovations taking place in every field - technological, economic, cultural. But this can be achieved more effectively if we measure ourselves against our own past, our own identity, as it has evolved from the beginning, directly comparing our own heritage with the innovation it has followed.

So, your bell bottoms and mini skirts don't fit you anymore? Well, you'll be pleasantly surprised how well these **"Artemide Classics"** still fit and we just can't pass up the opportunity to plug in the old cliche statement "good design is timeless".

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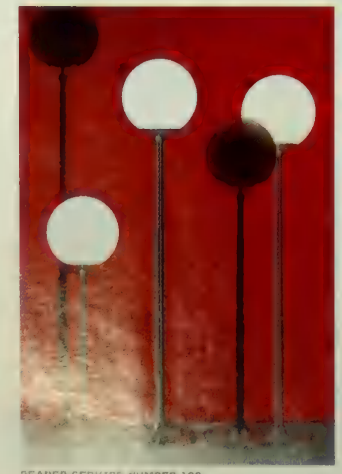

READER SERVICE NUMBER 122

The Bilco Company
The World Leader in the Manufacture of Specialty Access Products

Quality & Innovation. Attributes that have always been the hallmark of the BILCO Company. Since 1926, BILCO has been a pioneer in the development and manufacture of specialty access products for the construction industry. Today our product line encompasses a number of commercial and residential products that are marketed worldwide.

As we move toward the new millennium, BILCO will continue to pursue this philosophy in the products and services we offer, adapting to the ever-changing construction landscape. In recent years, we have developed and introduced a number of unique products required in the industry such as a horizontal floodtight door and a two hour U.L. listed fire rated door which satisfies the new, more stringent building codes that place an even greater emphasis on life safety.

We also look beyond traditional materials in our desire to combine innovation with performance. Earlier this year, we redesigned our Type J-AL door to incorporate a number of new and original features. Included in this redesign was the addition of lifting mechanism housings made from a highly corrosion–resistant composite material, another first in our industry.

Our vision is not just limited to the development of new products, but also to ensure that all Bilco Company employees are committed to customer satisfaction. To this end, we are in the final stages of completing our ISO 9001 certification and expect to be approved by the first of the year.

With over seventy years in the construction business, we have always strived to provide complete, comprehensive information to design professionals. Technology has had a tremendous effect on the speed in which business is conducted today. BILCO is firmly committed to the continuous advances in electronic technology and we are constantly updating our website (www.bilco.com) to make it even easier for architects and engineers to obtain information on our products.

As we look to the future, you can be certain that the BILCO Company will continue our legacy of quality and innovation in the products and services that we provide to the construction industry.

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Fax: (203) 933-8478
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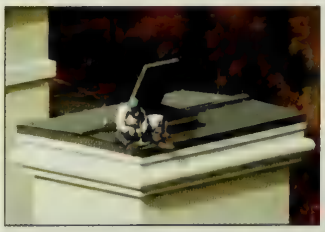

READER SERVICE NUMBER 123

Concrete Reinforcing Steel Institute Resources for Architects

Since 1924, the Concrete Reinforcing Steel Institute (CRSI) has been producing materials promoting the construction of reinforced concrete structures. Research findings, engineering reports, technical publications, computer programs, case histories, a biennial design awards program and seminars are all produced, using a variety of media, by the CRSI technical and marketing staffs.

Most recently, CRSI has produced a CD-ROM, ConSept Pro, A Conceptual Selection Process, that helps the architect take a step-by-step approach when considering all the necessary factors needed to evaluate the ideal structural system during the initial stages of design. After the initial phase, criteria development, where all the data is gathered and classified, structures and design opportunities can be optimally integrated.

During the second quantitative and evaluation phase key factors regarding project requirements, constraints and user desires are reviewed. This phase goes on to show how reinforced concrete offers significant advantages for these key factors: efficient construction techniques, design flexibility during construction, fast start-up using locally available material, lower floor-to-floor heights, natural fire resistance, lower insurance rates, early occupancy, more marketable space, seismic resistance and aesthetic freedom. These advantages are available for a variety of building types, from low rise to high rise, including institutional, commercial, educational and residential structures.

Materials included on the CD-ROM are an electronic workbook for evaluating concrete building design, a guidebook to structural systems and the video, Building Design Concepts which clarifies the selection process and shows examples of completed projects.

The CRSI Conceptual Selection Process is also available as a design seminar and is presented by CRSI staff. AIA members can receive either 2.0 or 4.0 learning units for attendance.

Local CRSI chapters and regions conduct local seminars of interest to both architects and engineers. Approximately 60 seminars are produced annually. Some of the topics covered include: building design, structural system evaluation, parking structure design, reinforced masonry design and tilt-up construction.

Founded in 1924, CRSI is a not for profit trade organization dedicated to furthering the quality design and construction of cast-in-place reinforced concrete. CRSI Headquarters are located in Schaumburg, Illinois, but recently regional offices have been added in Georgia, Texas, California and Washington to better serve the reinforced concrete construction industry.

CRSI
933 N. Plum Grove Road
Schaumburg, Illinois 60173-4758

Tel: 847-517-1200
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Website: www.crsi.org

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THE G.R. PLUME COMPANY ARCHITECTURAL TIMBER

WILL THERE STILL BE TIMBERS IN 1,000 YEARS?

Dwindling natural resources, increasing demand and expanding horizons of imagination are diametrically opposed facts of architecture's future. At The G.R. Plume Company, our work today helps insure that wood in all its warmth and grandeur remains a vital component of homes, offices and community structures for years to come.

The G. R. Plume Company architectural timbers achieve aesthetic and technical feats that are extremely difficult to accomplish with solid timbers. Working from the inside out, we engineer a timber with the strength and structural integrity to meet the specific real-world demands, including being environmentally responsible. The typical timber core is a configuration of solid Douglas fir or structural Glu-Lam. Its exterior is custom sawn solid wooden overlay carefully selected to meet project specifications. Wooden overlay gives the appearance of solid timber while actually requiring much less wood. This technique allows us to engineer what you view—a much more feasible and environmentally sound option than sourcing and sometimes wasting solid timber, and it allows us to fabricate timbers to schedule and specifications. Made completely of wood, The G.R. Plume Company timbers offer the presence of beautiful, natural solid timber with a high performance core.

Our timbers can be built in a variety of shapes- square, round, polygonal or curved- for interior and exterior use. With the constructed core you can specify in a range of visible or buried connections, including drilling for cables to enhance strength or stability. Two Seattle area projects illustrate the flexibility of our timbers: The Golf Club at Newcastle, called for built-up timbered trusses to mask structural steel I-beams, while Pacific Place's General Cinema demanded the look of solid, heavy rustic timbers, with an extremely lightweight hollow core to meet weight restrictions.

When it comes to engineered timber solutions, we are the leader. Our skills and techniques, constantly evolving, provide each client with a vast array of choices. At The G.R. Plume Company, we engineer bridges between the possible and the imagined, today and into the new millennium.

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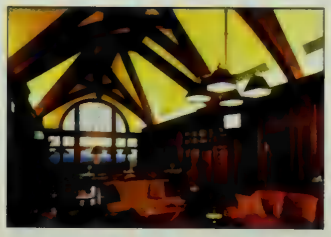

READER SERVICE NUMBER 125

The Italian Trade Commission "Marble Center" Division Italy: The Better Source For Marble, Stone & Machinery

Industry Presentation

Today the Italian stone industry is still the manufacturing and marketing model to imitate: Italy is the worldwide leader in marble and stone processing and the number one exporter of natural stone into the United States.

Among the latest advances in the stone world we can find the development of modular elements (MODULMARBLE, MODULGRANITE), a breakthrough that has promoted the increase in use of natural stone in the modern building industry. The "SUPERTHIN", extremely light tiles of 6 to 8mm thickness, easy to handle and install have reduced greatly international shipping costs.

These innovations continue giving the Italian stone industry a competitive edge over other countries in an environment where architects, designers and builders reward excellence in quality, novelties and cost-effective solutions.

Special Characteristics

The Italian marble sector incorporates the use of machinery with the irreplaceable role of the master craftsman who expertly inspects the blocks, the sawing, polishing, profiling, engraving, inlaying and carving. The search for good materials requires time, energy and expertise. In Italy numerous industrial drawing schools for arts and crafts, along with a tradition passed on for generations, impact apprentices with the specific knowledge of the architectural and ornamental disciplines and the variety of materials. This training ensures the right skills necessary to recognize the natural stone with veining uniformity, color matching and style continuity, all important elements to the final client. As the global market leader, the Italian stone industry depends on a very complex network of railroads, roads and ports that function around the needs of the stone industry. Special trucks can safely carry different materials of different sizes and types, from the most solid to the most delicate, from the quarries to the factories and from the plants to the ports.

Talented laborforce. State-of-the-art factories and infrastructure. Tradition. All critical ingredients that give Italian stone suppliers the competitive edge necessary to deliver the best quality products ranging from individual design pieces to large scale projects.

Italian Trade Commission
"Marble Center" Division
1801 Ave of the Stars, Ste. 700
Los Angeles, CA 90067

Tel: (323) 879-0950
Fax: (310) 203-8335
www.marblefromitaly.com

e-mail: marmora@marblefromitaly.com

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Marlite

Marlite is a well-known manufacturer and marketer of specialty wall products for commercial applications worldwide. The exclusive Marlite finish is renowned for its durability and easy cleanability as well as its beauty. But Marlite also offers a number of products with wood veneer, metal, industrial and sanitary surfaces. The combination of aesthetic appeal and high durability have made Marlite products particular favorites in a wide variety of commercial interiors, from corporate offices to restaurants. Marlite's dedication to quality, customer service and timely delivery has made their products favorites among designers, building owners and contractors alike. For more information, call 330-343-6621 or visit us on the web at www.marlite.com.

Surface Systems™ (left): An award-winning combination of high-design surfaces and pre-engineered application systems. There are over 55 surfaces available including exotic wood veneers, metals, faux finishes and industrial materials like phosphate cements. Four different engineered systems and a retail version are available.

Marlite Modules™ (top right): The newest Marlite decorative wall product is designed to bring the look of custom millwork to budget-conscious commercial interiors.

Marlite Plank™ (bottom right): A fresh new palette of architectural abstracts and faux prints has continued to make the 16" wide x 8' long x 1/4" thick Marlite Plank a popular and economical selection for high traffic commercial interiors.

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Tel: 330-343-6621
Fax: 330-343-7296
Web site: www.marlite.com

READER SERVICE NUMBER 127

Pergo Publiq

Product Presentation:
Pergo Publiq is the only true commercial laminate floor. It was developed by the inventor of laminate floors and is the greatest advancement in commercial flooring in several generations. Its soft, warm appearance and tough performance make it ideal for today's commercial applications. And, it reduces maintenance costs dramatically because it never needs to be waxed, sanded or refinished.

Features:

- 21 new and exciting designs
- Exclusive, patented Triple-Wear Protection™
- Advanced Dock Lock™ tongue and groove technology
- Proprietary LusterGard™ anti-slip technology
- Patented PerCore® moisture resistant core
- Ultra-comfortable, easy to install SilentStep™ underlayment
- Unprecedented Lifetime Warranty

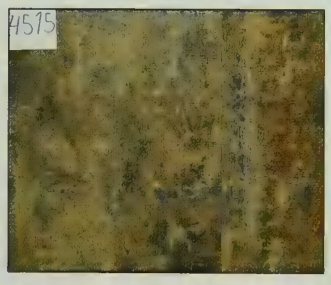
Benefits:

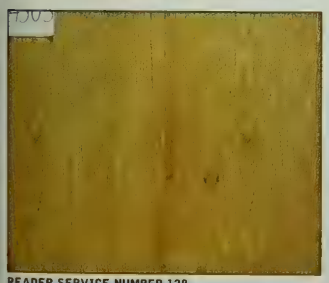
- Real wood look without the problems
- Never needs waxing or sanding
- More than twice the wear resistance of other laminates and seven times that of acrylic impregnated hardwood
- Won't "ugly-out"
- Installs over existing floors
- Cigarettes won't burn it
- Wine and chemicals won't stain it
- Quiet underfoot
- Slip resistant
- Meets UL, ADA and ASTM codes
- Proven worldwide in high profile locations

Materials used:

Pergo Publiq's outstanding wear resistance can be attributed to its patented Triple-Wear Layers impregnated with melamine resins. LusterGard,™ our exclusive top layer, is overlaid with melamine resins and other hard particles. Core papers provide indentation resistance and heat dispersion. PerCore® is a wood based, extremely stable and moisture resistant core.

Pergo, Inc.
Tel: 1-888-54-PERGO
3128 Highwoods Blvd.
Raleigh, NC 27604





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Breakthrough Design For Garage Doors Offers Windstorm Protection and More Safety, Without Sacrificing Great Looks

To protect people and property during the windstorms of the next century, Wayne-Dalton Corp. has introduced garage doors featuring the innovative StormGard Tensile Design™. Architects and homeowners no longer need to sacrifice appearance for protection. The system uses simple, sturdy components compared to other garage door windload reinforcement methods that build a web of metal struts across the inside of the door.

The new system is simple and quick to install and adds only about ten-pounds to a garage door; it is much lighter than existing reinforcement options which can typically add up to 150 pounds of unnecessary weight. The extreme weight savings increases the durability of the garage door, while making it safer and easier to operate.

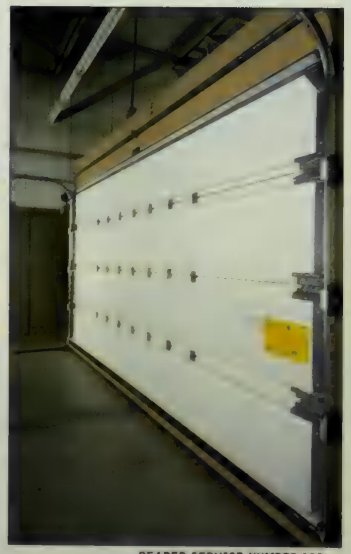
The unique StormGard Tensile Design uses a breakthrough concept that takes the strength of existing standard components and uses them to distribute windloads evenly across the solid structure of the doorframe. The system helps transfer hurricane force windloads to the sturdy frame, which absorbs most of the stress. During times of high winds, when a garage door is blown in, the damage often escalates even further as the storm pushes into the garage and up through the roof. This dramatically compromises the structural integrity of homes with attached garages and greatly increases repair costs.

As a great side benefit, the StormGard Design takes up much less space. Typical reinforcement struts can protrude up to six inches into the garage. When garage space is tight, which is becoming more of a problem with the growing popularity of larger trucks and sports utility vehicles, homeowners appreciate the extra four inches the system returns to their garage.

Hurricanes and wind storms are among the most powerful events on the face of the earth. Wayne-Dalton's StormGard Tensile Design provides homeowners added safety and protection to what is often the most vulnerable part of a house during such catastrophic events, the garage door. And it does so in a stylish and fashionable way.

Wayne-Dalton Corp.
Tel: (800) 764-1457
Web site: www.wayne-dalton.com/.

Wayne® Dalton



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VICE PRESIDENT / PUBLISHER
Elaine Shusterman
(212) 904-3475 Fax: (212) 904-4652
shusterman@mcgraw-hill.com

ASSOCIATE PUBLISHER
Laura Viscusi
(212) 904-6217 Fax: (212) 904-4256
lviscusi@mcgraw-hill.com

PRODUCTION MANAGER
Stephen R. Weiss
(212) 904-2793 Fax: (212) 904-6800
stephen_weiss@mcgraw-hill.com

PROMOTION DIRECTOR
Deborah Smikle-Davis
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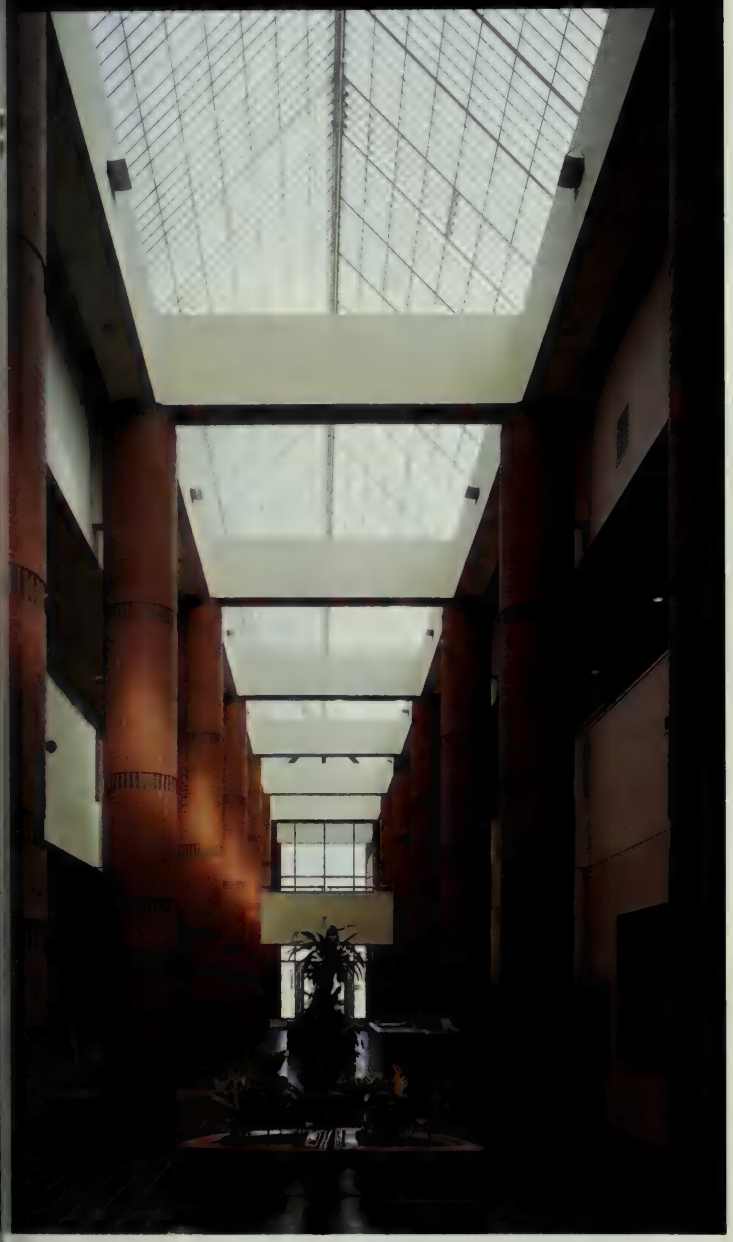

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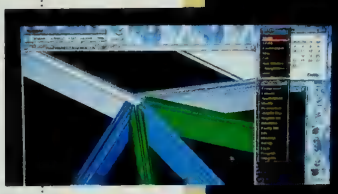

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VISTAWALL ARCHITECTURAL PRODUCTS
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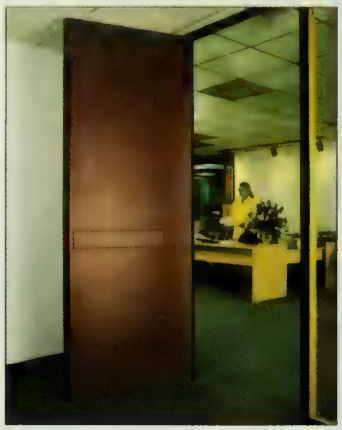
NATURALITE SKYLIGHT SYSTEMS
SKYWALL TRANSLUCENT SYSTEMS

CIRCLE 102 ON INQUIRY CARD

Applications

The new flush exit device is designed for use on TOTAL DOORS in single, pairs & double egress pairs. Ideal for corridor & elevator lobby applications in all commercial facilities. The exit device allows continuous, uninterrupted sight-lines in corridors when doors are pocketed in the open position. Its quiet operation is ideal anywhere noisy hardware is a problem. TOTAL DOORS can be retrofitted into existing door frames, saving time & expense.



Openings

CIRCLE 150 ON INQUIRY CARD

Concrete Waterproofing by Crystallization

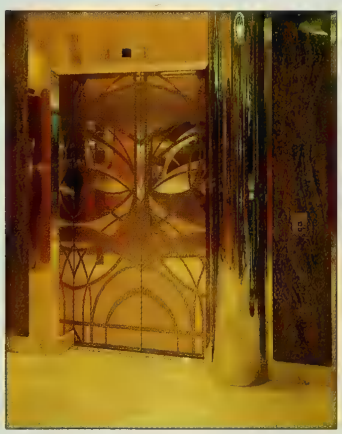
Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures.

Xypex Chemical Co.

CIRCLE 151 ON INQUIRY CARD

Custom Metal Graphics

These bronze elevator door facings were manufactured by Surface Design + Technology specializing in custom & standard metal graphics. Using sheet metal finishes of a variety never offered before. There is virtually no limit to the types of patterns which can be created by combining multi-directional satin brushing, electroplating of gold, nickel, or copper. For information on custom or standard designs call (800) 537-1127.



Surface Design

CIRCLE 152 ON INQUIRY CARD

ADA Insulation Safety Covers

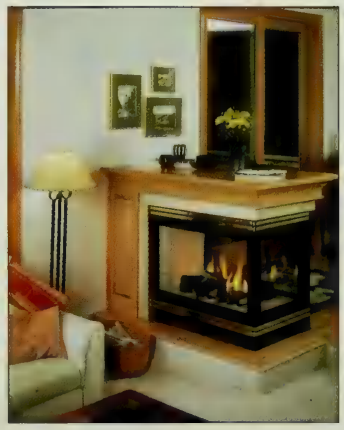
Plumberex Specialty Products, Inc. is the only company that manufactures a complete line of ADA safety covers for commercial & residential applications, meeting all building & fire codes with a -0- smoke rating. The Handy- Shield™ Safety Cover is the one and only ADA safety cover on the market with a "Dual" fastening system to help deter theft! For more information call (800) 475-8629, Website: www.plumberex.com or email: plumberex@earthlink.net.

Plumberex Products, Inc.

CIRCLE 153 ON INQUIRY CARD

Three-Sided Fireplace for Unlimited Installations

Heat-N-Glo introduces model PIER-TRC, a three-sided direct vent fireplace that can be terminated vertically or horizontally to accommodate nearly any application. The PIER-TRC is perfect as a room divider, bar, end of counter or a wide variety of creative installation possibilities. As with all Heat-N-Glo fireplaces, the PIER-TRC can be operated by remote control for the ultimate in convenience. Call (888) 427-3973.



Heat-N-Glo

CIRCLE 154 ON INQUIRY CARD

Decorative Grilles

Unusual visual effects emerge when our grilles are designed for area effects. Versatility is the theme. R&G offers architects and interior designers many ways to express the changing forms of metal with the integrity of R&G's architectural grilles. Custom or standard finishes are available plus any grille can be made in matching color to blend with your deco. 202 Norman Ave., Bklyn, NY 11222. 800-521-4895, Fax: 718-349-2611.

Register & Grille Mfg., Co

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Ornamental Picket Fence with a Purpose

We have given special attention to each & every component of our fence. Every item is designed for strength, durability and low maintenance. No other company builds a complete fence - rail, rivets, brackets, pickets and posts, that are stronger, more durable, have more security or lower maintenance costs than our fences. Monumental Iron Works, 6500 Eastern Ave., Baltimore, MD 21224. Tel: (410) 633-6500, Fax: (800) 239-2963.

Monumental Iron Works

CIRCLE 156 ON INQUIRY CARD

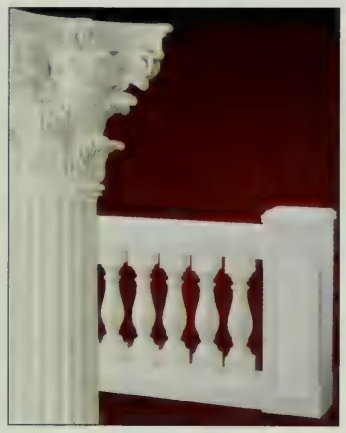
The No 2006 is a Bauhaus handle based on a Walter Gropius design. Nanz manufactures this and a wide range of other levers, knobs, locks, hinges and cabinetry hardware. Fax a request for our free Product Selection Guide or our $20 catalogue featuring this and over seventy other handles. phone 212 367 7000, fax 212 367 7375

Nanz Custom Hardware Inc

CIRCLE 157 ON INQUIRY CARD

Columns and Balustrades

Classically authentic yet affordably priced columns and balustrades from Melton Classics, Inc. Quality products include: fiberglass columns, marble/resin composite columns, and architectural wood columns for paint or stain. New from Melton Classics is our full line of MeltonStoneTM cast stone columns, alustrades, and architectural elements. Call 800-963-1060 for free literature or see our website at www.meltonclassics.com.



Melton Classics, Inc.

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Reclaimed. Remilled. Remarkable.

Vintage Lumber has been manufacturing exceptional antique wood flooring since 1973. Available in 16 species and grades, solid and engineered, for residential or commercial construction. Our extensive selection and consistent quality and service is unequaled in the industry. For more information call 800-499-7859 or email woodfloors@vintagelumber.com PO Box 104, Woodsboro, MD 21798 www.vintagelumber.com.

Vintage Lumber

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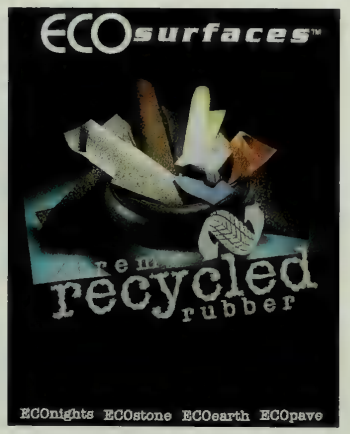
Dodge-Regupol Launches ECOsurfacesTM

Dodge-Regupol (DRI), the world's largest converter of post-consumer tire rubber, launches Ecosurfaces™, extreme recycled rubber™ flooring for both indoor & outdoor commercial applications. Not only environmentally sound, but also available in 38 vibrant colors, Ecosurfaces in rolls & tiles responds directly to designers' needs & their budget concerns. For a fresh new colorful way to create attractive environments, call Gerbert Ltd @ 1-877-ecosurfaces (1-877-326-7873)



Gerbert Ltd

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Unique Earlychildhood Furniture

GRESSCO, Ltd introduces HABA® a new line of children's modular Loft furniture, shelving, platforms and room partitions in addition to our existing array of KinderSystem™ reading furniture. Now you can create a truly unique children's area in your hospital waiting room, daycare center, church or library. Call Gressco today for a FREE catalog at 1-800-345-3480, www.gresscoltd.com.

GRESSCO Ltd.

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Let lighting make your display pop! UL NEW HyLyter™ shelving is the only available shelving system with the lighting fixtures built-in to the shelf. Each shelf, whether it is a sloping display shelf, slatwall display or a standard flat shelf, has the lighting built-in! HyLyter is UL approved and easy to install. Let HyLyter create eye-catching entrance displays or use it throughout your application and save on your overall lighting costs. For more info contact Gressco at 1-800-345-3480 or e-mail us at www.gresscoltd.com.

SCANIA® from Gressco

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New Presage™ Whirlpool

Designed for corner installations, the new Presage™ whirlpool bath by Jacuzzi Whirlpool Bath features ten adjustable jets. An ideal complement to the Presage, the Trivella™ Suite features a one-piece toilet with elongated rim and terraced tank lid as well as a pedestal lavatory. (800) 288-4002. www.jacuzzi.com.

Jacuzzi Whirlpool Bath

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ADA Compliance Signage

Innerface makes it easier for you to meet the Americans With Disabilities Act (ADA) signage standards. Innerface offers (1) A variety of compliance signage, (2) National distribution (3) Solid 27 year history and (4) Economical, attractive, & highly functional interior and exterior signage. Innerface also offers signage planning and wayfind-ing services. For free literature, please call (800) 445-4796.

Innerface

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New Fire Retardant Treated Wood Catalog

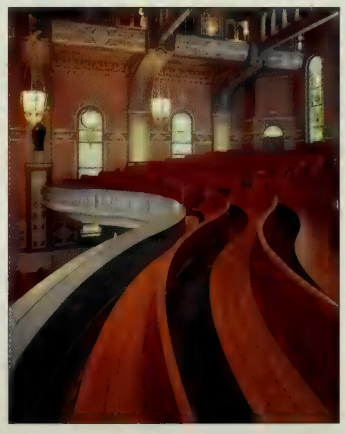
Order the latest treated wood catalog from Hoover Treated Wood Products, Inc. PYROGUARD® and EXTERIOR FIRE-X® are the featured products. CCA KDAT and COP8® preservative treatments along with PLYWALL Sound Barrier System are included. Visit Hoover's web site at www.frtw.com. For a free catalog call 1-800-TEC-WOOD (832-9663) or e-mail hoover@frtw.com.

Hoover Treated Wood

CIRCLE 165 ON INQUIRY CARD

The Radius Church Pew

Since 1919, New Holland Church Furniture has supplied churches nationwide with both custom & standard church furniture. Today, New Holland is the only manufacturer of "True Radius Pews" in the USA. As a certified member of the Architectural Woodwork Institute (AWI), you can be assured of our consistent high quality. New Holland has just developed all new product catalogs for our Pews & Solid Wood Chairs. New Holland Church Furniture, 313 Prospect St, New Holland, PA (800) 220-1465



New Holland

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"ellen's brackets", an anodized-aluminum shelving system designed by M Ali Tayar, provides an elegant alternative to existing bracket-and-track systems. Cantilevered brackets come in two sizes, for shelves 3/4 or 3/8-in. thick and 10-in. deep. Wall-mounted tracks permit 1 1/2-in. adjustment of wood, glass or plexiglass shelves. For more info phone Parallel Design Tel: 212/989-4959 Fax: 212/989-4977.

Parallel Design

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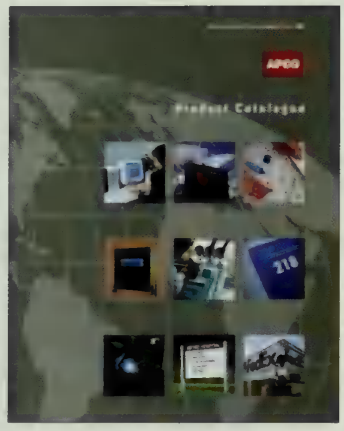
APCO manufactures an extensive line of architectural signage designed to complement any environment. From interior and exterior signs, to directories, displays. ADA compliant and user-updatable signs, we have the solution to your identification needs. Professional services such as wayfinding, sign design, ADA surveys, project management, and factory installation are also available. APCO Graphics, Inc., Phone: (404) 688-9000, Web: www.apcosigns.com, E-mail: sales@apcosigns.com



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Keystone Ridge Designs, Inc. is the architect's choice for premier site amenities. Offering a full line of steel furnishings, we pride ourselves on exclusive designs and our patented powder coat finish, KEYSHIELD™, that is unparalleled in the industry. Quality, craftsmanship, and dedication to your creative vision are the hallmarks of Keystone Ridge Designs. For more information please call 1.800.284.8208 or e-mail KeystonRdg@aol.com. www.keystoneridgedesigns.com

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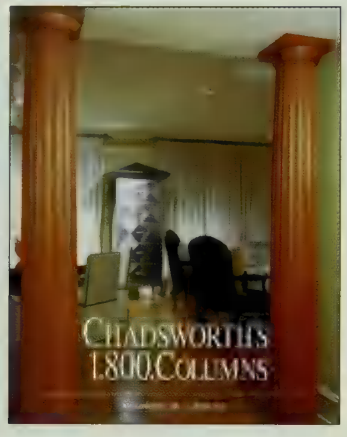

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Waste and/or soiled linen. Perfect for large hospitals and similar buildings that serve thousands of people. Improve the building environment, management, and maintenance. Full-vacuum and gravity/vacuum technology. Custom design each system to building specifications. www.transvacsys.com

Transvac System, Inc.

CIRCLE 171 ON INQUIRY CARD

Connector Catalog Expanded

For 2000, Wood Construction Connectors now incorporates Simpson's entire connector line, including composite wood and plated truss applications. The industry's most comprehensive connector reference for architects, structural engineers and building officials, the catalog includes updated specifications, load charts, applications drawings, and building code acceptance. Seventeen new products are introduced. Simpson Strong-Tie Company is ISO9001 registered.

Simpson Strong-Tie Co., Inc

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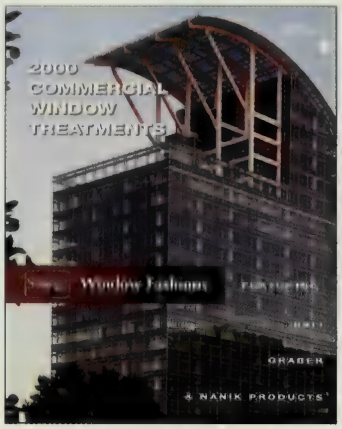
The beauty of an Independant Hood is breathtaking! A close inspection reveals an exquisite under-hood design that incorporates an easy-to-clean surface with brilliant and ambiance halogen lighting. The warmth of copper, the brilliance of brass, and the strength of stainless are the powerful raw materials that capture your attention...our attention is to detail. We ultimately create a hood for the connoisseur. Contact us at 1-800-7-NEVADA or www.independent@kitchenhood.com

Independent Inc.

CIRCLE 173 ON INQUIRY CARD

Spring Window Fashions

Spring Window Fashions manufactures window treatments for commercial applications. Brand names and products include: Bali horizontal blinds, Graber vertical Blinds, cellular and pleated shades and drapery hardware and Nanik wood blinds. Call our Architectural Hotline at 800-327-9798 for answers to technical questions or to request faxed copies of product specifications. Plan to see us in June at CSI in Atlanta, Booth 1511.



Spring Window Fashions

CIRCLE 174 ON INQUIRY CARD

Metal Ceilings For Designing The New Millennium

Chicago Metallic Corporation® introduces its' special edition 2000 portfolio of industry leading ceiling suspension systems. The catalog focus is on standard ceiling grid systems with emphasis on both designer and functional systems. Also detailed are specialty products including perimeter curved/straight trim, fiberglass and vinyl-gyp ceiling panels, fiberglass reinforced panels (FRP) and the newly introduced drywall grid system. (800) 323-7164.

Chicago Metallic Corporation

CIRCLE 175 ON INQUIRY CARD

The Insulated Drainage Board

ThermaDrain® eliminates the need for a clean airspace. Currently, a 2" airspace is the primary means of providing sufficient drainage for cavity walls. However, poor workmanship, mortar blockages and mortar bridging can and does occur in airspaces 2" or greater. This allows water to bridge the cavity before it ever reaches the flashing and weepholes. ThermaDrain® eliminates workmanship problems and provides a continuous drainage path to the required flashing. Call us for a data sheet and a free sample.(800-837-4065)
*Patent Pending

ThermaDrain* ®

CIRCLE 176 ON INQUIRY CARD

FRT Wood & Building Codes

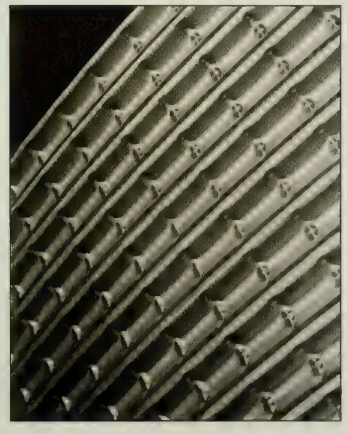
"Reference Guide for Designing with Fire Retardant Treated Wood" outlines code-compliant applications for FRT wood. Guide also covers design properties, test standards, identification, and specification, and describes the Dricon® brand which has been used effectively since 1981 in multi-family, commercial, and institutional structures. (www. dricon.com)

Hickson Corporation

CIRCLE 177 ON INQUIRY CARD

Curved 7/8" corrugated metal roof & wall panels

Curveline's service center can curve over 100 varieties of metal panels, now including 7/8" corrugated profiles. The patented "crimp-curving" process transforms an ordinary corrugated profile into a highly textured panel with diamond-embossed appearance. Applications include roofs, walls, canopies, etc. Phone 909-947-6022, fax (909) 947-1510, web www.met tile.com/curveline, email curveline@curveline.com.



Curveline, Inc.

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Scoreboards for Sports NEVCO Scoreboard Company

NEVCO Scoreboard Company manufactures scoreboards for the following sports: basketball, baseball, football, soccer, wrestling, volleyball, swimming, track, hockey and in-line hockey. Our indoor scoreboards are available in incandescent and LED (light emitting diodes). Nevco scoreboards carry a 5 year guarantee and areUL Listed/CSA Certified. Call 800-851-4040 for information and a free color catalog. We have been manufacturing scoreboards for over 65 years. www. nevcoscoreboards.com E-mail: nevco@nevcoscoreboards.com

NEVCO Scoreboard Company

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UV/FX wrote the book on Ultra-Violet Visual Effects which are designed, art directed and painted (and now even printed). UV/FX specialize in Dual Images, Complete Invisible treatments, Day to Night Effects, 3-D scenery and more for changing themed walls, backdrops and ceilings. www.uvfx.com, Tel./Fax 310-392-6817.

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LO/MIT-I Radiant Barrier Coating is a silver colored, non-thickness dependent, low cost spray applied replacement for foil type barriers. It conforms to ASTM C 1321-98 specification for "Interior Radiation Control Coatings", and is an EPA Energy Star Ally product. Shipped premixed, it is easily applied with standard spray equipment. Solar Energy Corporation, 129 Walters Ave., Ewing, NJ 08638-1829. Phone: 609-883-7700, Fax: 609-497-0182, Web Site: www.solec.org, E-mail: 71263.413@compuserve.com

Solar Energy Corporation

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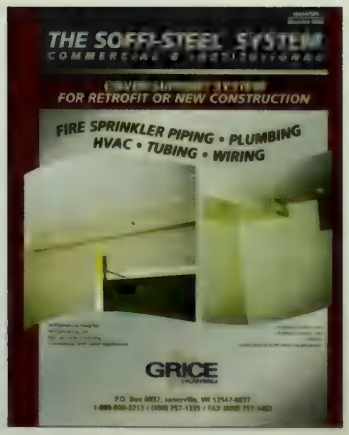
The Soffi-Steel™ System is available for commercial and institutional applications, a pre-fabricated, rugged, snap-on soffit with an attractive and quick clean installation. Commercial Soffi-Steel for hospitals, dormitories, apartments, etc. Institutional Soffi- Steel is used for jails, and prisons. Custom sizes, shapes and finishes. Contact: Grice Engineering, Inc, 1-800-800-3213, Fax: 608-757-1452. E-Mail: gei@mindspring.com



Grice Engineering, Inc.

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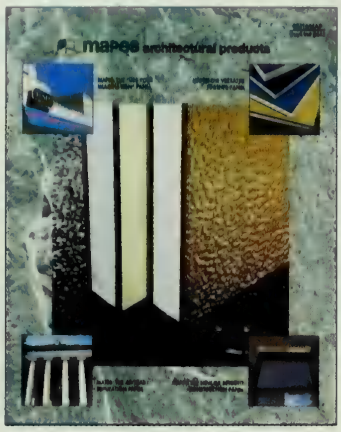
Graffiti Resistant Panels For Wall Applications

Mapes Industries offers a complete line of graffiti resistant panels with a genuine porcelain enamel on aluminum surface. In-house color matching capabilities combined with various component options provide the designer with unlimited design solutions. Kynar, anodized and baked enamel finishes are also available. For more information, contact the factory at www.mapeind.com



Mapes Industries, Inc.

CIRCLE 186 ON INQUIRY CARD

New Pemko Full Line Catalog

Among the new products featured in Pemko's 135 page 1998-9 catalog, are HSS2000 (an intumescent fire life-safety product), FG3000 (an amazing glazing compound which allows for much larger lites in rated doors), security door bottoms to deter lever handle break-ins), new special purpose continuous geared hinges, ADA compliant rubber and aluminum ramps, as well as expanded brush products.

Pemko

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Granite Cobblestone in Modules

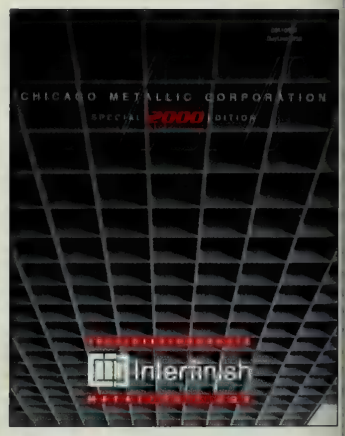
An updated catalog features authentic European cobblestone preassembled in modular form. Modules in square, fan, concentric ring, and custom formats arrive at the jobsite ready for a quick and easy installation. Pedestrian or vehicular application. Eurocobble® has supplied the design community with traditional and customized paving solutions for over 15 years. Call toll free (877) 877-5012.

Eurocobble®

CIRCLE 188 ON INQUIRY CARD

Metal Ceilings For Designing The New Millennium

Chicago Metallic Corporation® unveils its special 2000 edition catalog of Interfinish® Brand Metal Ceilings and Specialty Products. Featured in the catalog are the complete line of metal ceilings including linear, open cell, luminous and decorator metal pan and security ceiling systems. Specialty products are also featured including the latest in glass reinforced gypsum lay-in panels, the environmentally friendly Eurostone panel, wood ceiling panels and the newly introduced Graph-Grid lay-in panel system.



Chicago Metallic Corporation

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Air Space Maintenance and Drainage Systems

CavClear® products provide a continuous drainage area behind brick and stone. When installed full-height, excess mortar is prevented from entering the air space. Ensures water management and helps protect masonry ties from mortar droppings which can trap moisture and corrode the ties. Prevents mortar from creating a thermal bridge between wythes and allows moisture to migrate freely to unobstructed weeps. Made of 100% post-consumer plastic recycled into a non-woven mesh. Call toll-free (888) 436-2620.

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Metropolitan 1/2" thick quarry tile is ideal for installations that require slip resistance, durability, and a handsome natural look. Metropolitan is introducing new standard shapes and custom shape options along with new glaze capabilities for even more choices. A variety of shapes and sizes, trim (including barrier free components), and new color range products are available. For our complete catalog phone 1-800-325-3945. Visit our web site www.metroceramics.com

Metropolitan Ceramics

CIRCLE 191 ON INQUIRY CARD

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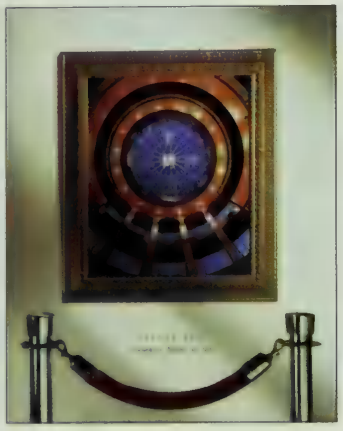

Super Sky Products, Inc.

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Pergo® Publiq: The Only True Commercial Laminate Floor

Pergo® Publiq was developed by the inventor of laminate floors and is the greatest advancement in commercial flooring in several generations. Its soft, warm appearance and tough performance make it ideal for today's commercial applications. And, it reduces maintenance costs dramatically because it never needs to be waxed, sanded or refinished.

Pergo, Inc.

CIRCLE 193 ON INQUIRY CARD

Custom Noise Absorption Products

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New Acousti-Mat II, The Superior Sound Control System

Acousti-Mat II is the cost-effective solution to "noise" complaints, even with ceramic and wood floors. Acousti-Mat II consists of a nylon core of entangle filaments, attached to a nonwoven fabric. It creates a void area between the subfloor and a high strength Maxxon® underlayment, to actually isolate sound waves. 800-356-7887; fax: 612-478-2431; www.maxxon.com

Maxxon Corporation

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Building Home Remodeling

Waupaca Elevator has the answer your Up/Down needs. In busiess for almost 50 years we ave perfected the comfort, conenience, mobility, and safety ecessary for the modern home evator. Look to the 21st Century home design by installing a Waupaca Elevator in your home oday. For further information ontact: 1050 So. Grider St., ppleton, Wi. 54914. Tel: 1-800-38-8739.

Waupaca Elevator

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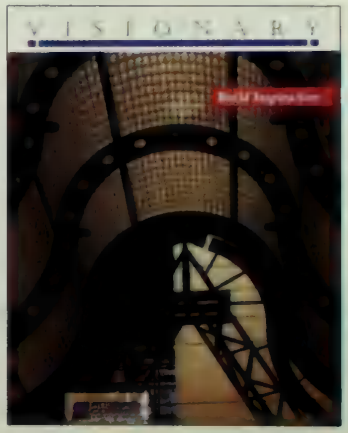
Pittsburgh Corning™ Glass Block

Featuring commercial and residential applications, our idea book gives you an inspiring, up close look at how architects are using glass block to make their visions a reality.



Pittsburgh Corning™

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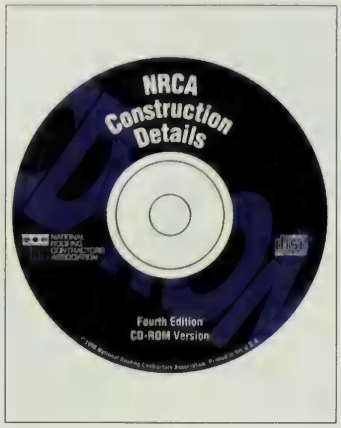
NRCA Construction Details on CD-ROM

The disk contains more than 350 built-up roofing, modified bitumen, thermoplastic, thermoset, architectural and structural metal, sprayed polyurethane foam, and waterproofing construction details. With your CADD software, you can modify the details for your specific projects. The disk contains both .DWG and .DXF files for use with AutoCad and other CADD software.



NRCA

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PORCH-LIFT® Vertical Platforms

PORCH-LIFT® Vertical Platform Lifts form Access Industries are designed to raise and lower a wheelchair user from one level to another indoors and outdoors for public buildings of all kinds. Easy to install and operate, the lifts require little to no site modification to install next to stairs or a landing. Standard models can be installed in a custom hoistway (shown above) to blend with any building design or accessability plan.

Access Industries

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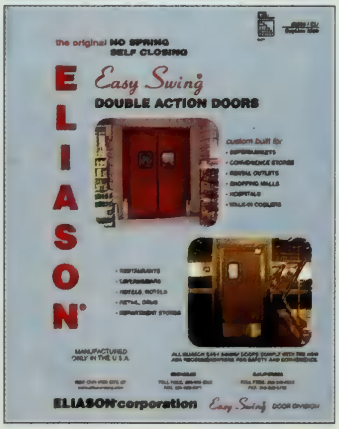
Eliason Easy Swing Doors

Eliason double action doors are for use in all service, traffic and convenience doorways. Doors can be custom built to fit existing openings. Available in singles or pairs in a variety of sizes, styles and decor options. A light assist opens the doors and the closing action is positive and automatic. Doors are sold direct and a Price/Spec catalog will be sent no charge. Eliason Corporation, P.O. Box 2128, Kalamazoo, MI 49003. E-mail: doors@eliason-corp.com



Eliason Corporation

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Skylights and Translucent Daylighting

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Major Industries

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Garland Architectural Services – Your Silent Business Partner

Receive a FREE Architectural CD complete with easy-to-use CSI formatted specifications and details. Learn how Garland products and technical services can develop the proper roofing solution for your next project. The Garland Company, Inc. is an ISO 9001 certified company offering high-performance systems that meet today's roofing requirements. Hot and cold built-up systems, modified bitumen, and fluid applied systems as well as a complete line of architectural and structural metal roofing systems. For more information contact Garland at 1-800-741-3157 or www.garlandco.com

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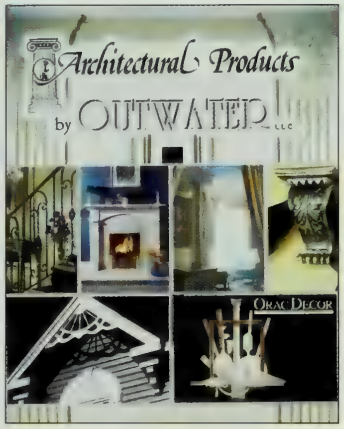

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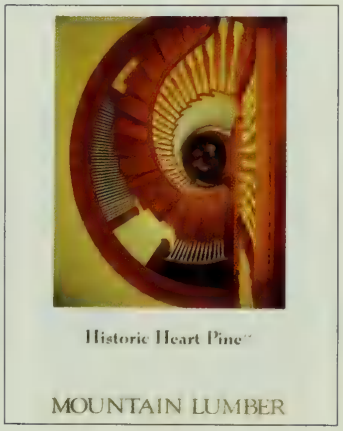

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Peerless

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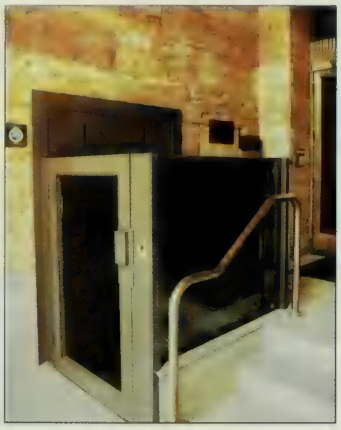

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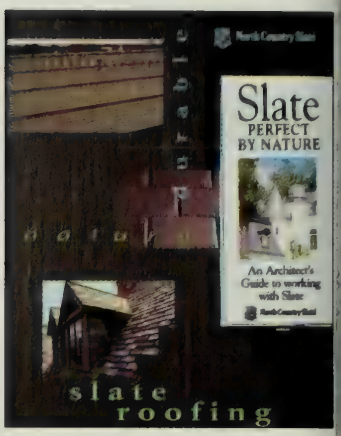

North Country Slate

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North American Hardwoods

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The Hardwood Council

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Tech Lighting

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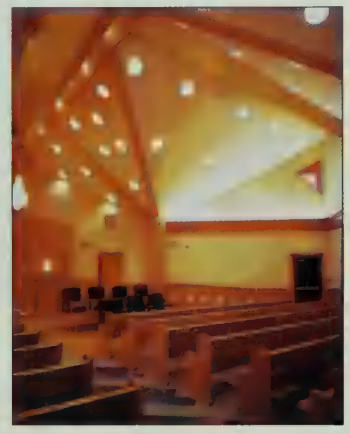

Eurospan

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Seminar Highlights Benefits of Foam Core Metal Roofs

The Metal Construction Association is offering a seminar that showcases the many advantages of foam core metal roofs, compared with competitive materials. It's enjoyable, interesting and informative – and you can earn AIA continuing education credits just for attending. Contact Centria at 800-759-7474 or Foam Core Metal Roof at 1-877-902-ROOF for complete details.

Centria

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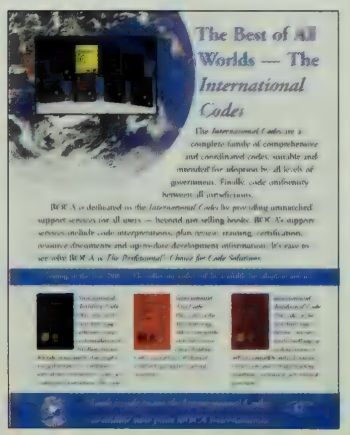
BOCA offers Architects technical support services, including code interpretations, plan review, seminars and certification, along with International Code books and time-saving International Codes on CD. You can also earn AIA CLUs by taking courses from BOCA Campus on-line. For a FREE International Code Catalog, or to place an order, call BOCA toll-free at 1-800-214-8321, ext. 769. BOCA is the Architect's Choice for Code Solutions.



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Acorn Engineering Company

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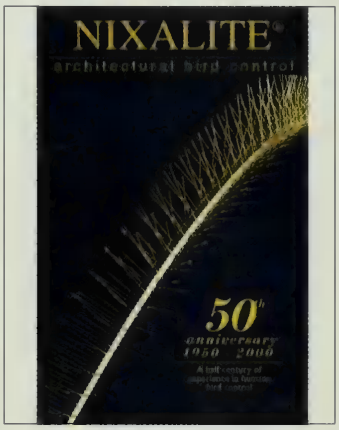

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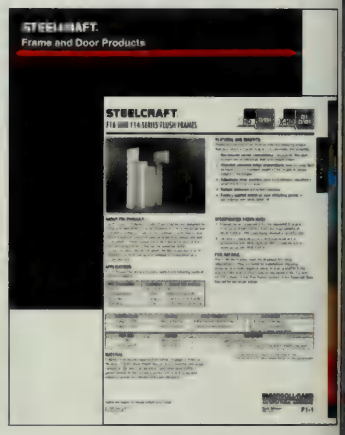
The Steelcraft Spec Manual is designed as an educational tool for architects, specification writers and distributors. It includes product details, specifications and fire rating information on all Steelcraft products including frames, doors, lites and louvers, and architectural stick systems. For more information call (800) 930-8585. http://www.steelcraft.com



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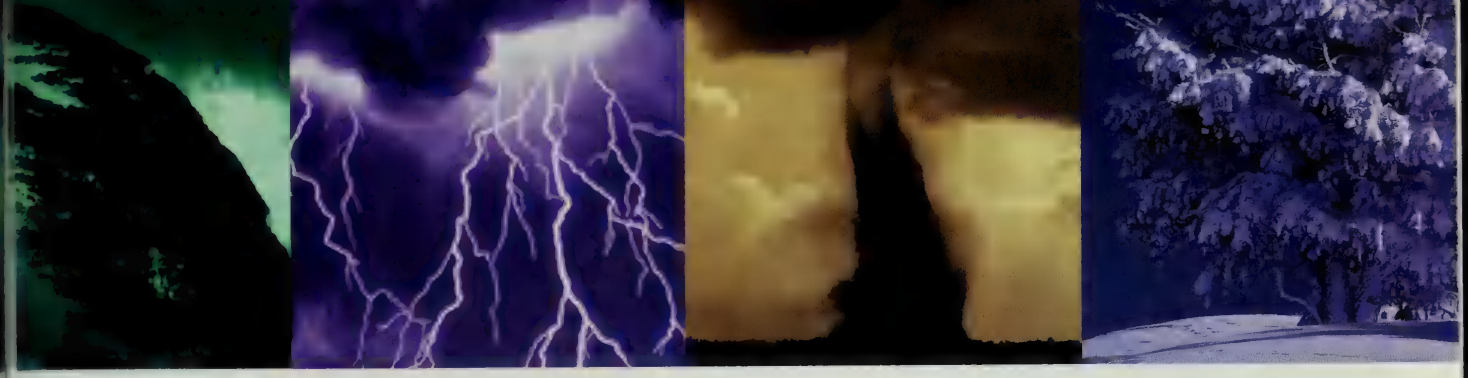

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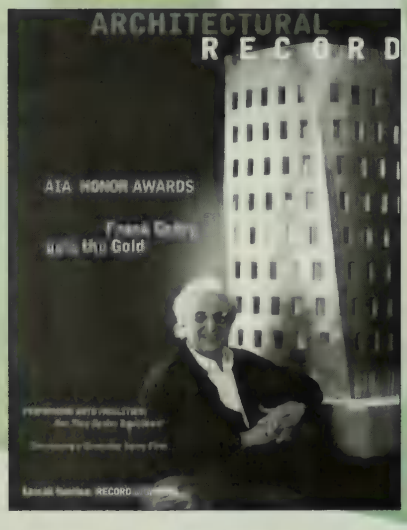

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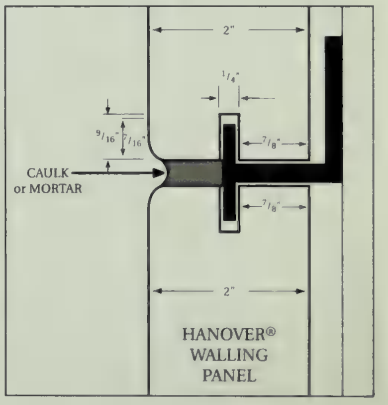

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CIRCLE 106 ON INQUIRY CARD

THE FUTURE The next generation of architects will design completely within a virtual world. What will be the architectural language of the future?

BY RITA F. CATINELLA

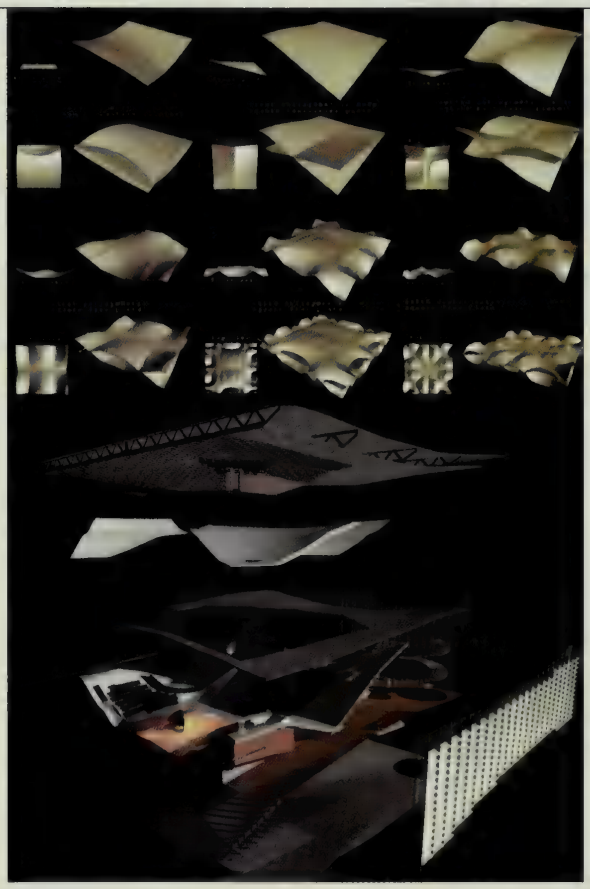
As we enter the next century, what is likely to be the architectural language of the future? We have witnessed the gradual shift from the hand to the computer this century, and digital design students now have the potential to be the pioneers of new methods of designing; this time in the virtual world.

One expert who is familiar with the potential for digital architecture is Eden Greig Muir, director of Computers, Graduate School of Architecture, Planning, and Preservation at Columbia University and founder of Cybersites Inc., a firm that creates unique virtual communities.

"The new generation of students have skills in video, web design, animation, and interactive multimedia. They are using 3-D design as a real working environment for inventing form and space. That is their new habitat," says Muir.

Muir feels the question of an emerging architectural language is related in many ways to the new tools available. These tools include numerically controlled milling of building components and stereolithography, which builds any shape as a plastic replica using a polymer resin and a laser beam.

"These technologies take us directly from the virtual 3-D model to the built form," says Muir. "Economical automated construction of customized designs is on the horizon, beginning with components such as windows, furniture, and modular homes, and leading to full-scale production of architecture of previously impossible complexity benefiting from direct architectural control by a new generation of 'digital master builders.'"



This advancement is not without repercussions. "It's interesting that the technical vocabulary of young digital designers is already separating them in many ways from older architects," adds Muir, referring to terms such as NURBS (Non-Uniform Rational B-Splines) and procedural textures. NURBS-based tools provide the designer with an amazing amount of control over the geometry of curves, via "weights" and "knots" which can be pushed and pulled. "This means talented young architects can leapfrog past their elders into new areas."

Unfortunately, these new terms and techniques replace older skills.

"Sadly, I think they will lose the skill to draw, and this is already apparent," says Muir. "The best students can still work on a conceptual sketch, but they don't have the time to practice those skills."

The 3-D design process has been adopted by recent Columbia graduate student Joseph Kosinski. Last year, in Victoria Meyers' studio at the GSAP, Kosinksi designed a proposed music performance space for the University of Minnesota, Duluth. The project entailed the development of a spatial concept through interactive manipulations in a 3-D animation environment.

The catalyst for this project, Kosinski explained, was a series of topographical diagrams developed in the 18th century that attempted to describe, two-dimensionally, the deflection of rigid plates subjected to vibrations such as sound waves. With the aid of a 3-D computer modeling program (form*Z 3.1 by Auto•des•sys), he was able to transform these diagrams into 3-D surfaces (top). "At that point, it was a matter of working the program into this formal study. In the end, it's as if the building responds to the program within."

In addition to defining the program, which included a 450-seat performance hall, a lobby space, and a rehearsal room, the plates also work tectonically, supporting themselves as reinforced-concrete shells and creating the unobstructed space of the performance hall (bottom). But using new tools changes the intrinsic thought process of creating architecture, explains Kosinski.

"Architects are now experimenting with the computer as a partner in the design process that helps generate ideas," he adds. "The architect almost acts as a programmer who sets up a system the computer then operates on."

Welcome to the 21st century. ■

PHOTOGRAPHY: © JOSEPH KOSINSKI

Office Standards

by Charlie White, AIA

.ast month, Sigma Design International introduced the next generation in emerging echnology for the profession of architecture – ARRIS 2001. One of the most important eatures of this new technology is an easy to use interface for architects to develop and stablish office standards for their firm's CAD environment. Strong office standards are an ssential part of being productive and efficient with your work on the computer.

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Infortunately, most architectural firms do not have effective office standards. Recently, we ave been consulting with an architectural firm who is working in a joint venture on a multi-illion dollar project here in the U.S. The architectural firm they are working with is one of e most renowned and respected design offices in the world. Our client is producing 40% f the drawings for the project and contacted the design firm to coordinate office standards r the project in order to work together more efficiently and minimize compatibility issues. Iuch to our client's surprise, the design firm informed them that they had no established ffice standards for their CAD environment. None! There is no way that the design firm entioned can be utilizing their computing solution effectively.

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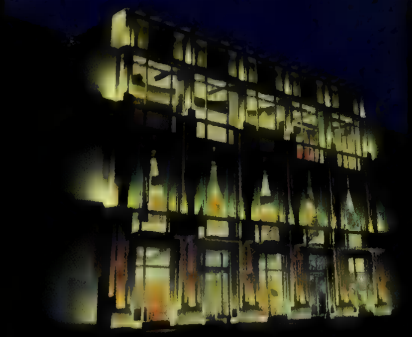

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